

PROJECT OFFICE QUALITY ASSURANCE AUDIT REPORT
YUCCA MOUNTAIN PROJECT AUDIT OF SANDIA NATIONAL LABORATORIES

AUDIT NUMBER 88-06

CONDUCTED: JULY 25 - AUGUST 3, 1988

Prepared By: Gerard Heaney W. R. Sublette Date: 9/1/88
Gerard Heaney W. R. Sublette
Lead Auditor Lead Technical Specialist

Approved By: J. E. Clark for H. H. Caldwell Date: 9/19/88
H. H. Caldwell
Division Manager, Audits

Approved By: James Blaylock Date: 1/89
James Blaylock
Project Quality Manager

EXECUTIVE SUMMARY

PROJECT OFFICE AUDIT REPORT NO. 88-06

SANDIA NATIONAL LABORATORIES

ALBUQUERQUE, NEW MEXICO

July 25 through August 3, 1988

It is the opinion of the Project Office audit team that there is an awareness of Quality Assurance throughout the Sandia organization. The implementation of the QA program at Sandia is effective with the following exceptions:

- 1) the SNL audit program should utilize technical auditors when performing audits of design subcontractors,
- 2) the submittal of records from subcontractors to Sandia and a timely technical and QA review of these records at the close of an activity or contract would enhance the content of record packages, and
- 3) the assignment of training to Sandia personnel should be reevaluated as some personnel have not been assigned some basic training. Additionally, training should be given to revisions of procedures to maintain proficiency.

Fourteen deficiencies were identified during the course of the audit. The audit team also generated twenty-five observations and six recommendations. Several of the deficiencies could have been avoided had Sandia submitted to Project Office in a timely manner, a QAPP meeting NWSI NVO-196-17 Revision 5, requirements. Timely submittal of future QAPP revisions and subsequent incorporation of revised requirements into Sandia implementing procedures would help to bring the Sandia QA Program into full compliance with YMP Quality Assurance requirements.

1.0 INTRODUCTION

This report contains the results of a Quality Assurance Audit of the Sandia National Laboratories (SNL) support of the Yucca Mountain Project (YMP). The audit was conducted at the SNL facilities in Albuquerque, NM, on July 25 through August 3, 1988. Although originally scheduled to conclude on July 29, 1988, the audit was extended to August 3, 1988, to allow for a more in-depth review by the audit team of certain quality related activities performed by SNL. The audit was conducted in accordance with the requirements of the Waste Management Project Office (WMPO) Quality Assurance Program Plan (QAPP), WMPO/88-1, Rev. 0, and Quality Management Procedure (QMP)-18-01, "Audit System for the Waste Management Project Office," Rev. 2.

2.0 AUDIT SCOPE

The purpose of this audit was to evaluate the effectiveness of the SNL Quality Assurance Program through verification of the implementation of the SNL QAPP, Rev. 0, and its implementing procedures.

3.0 AUDIT TEAM PERSONNEL

The audit team consisted of:

Henry H. Caldwell	Audit Team Leader	SAIC, Las Vegas, NV
Gerard Heaney	Lead Auditor	SAIC, Las Vegas, NV
Catherine Thompson	Auditor	SAIC, Las Vegas, NV
James Ulseth	Auditor	SAIC, Las Vegas, NV
Stephen Dana	Auditor	SAIC, Las Vegas, NV
William Camp	Auditor	SAIC, Las Vegas, NV
Frederick Ruth	Auditor	SAIC, Las Vegas, NV
Wendell B. Mansel	Auditor	YMP, Las Vegas, NV
Mae Cotter	Auditor Candidate	SAIC, Las Vegas, NV
William Sublette	Lead Technical Specialist	SAIC, Las Vegas, NV
Forrest D. Peters	Technical Specialist	SAIC, Las Vegas, NV
Margaret C. Brake	Technical Specialist	SAIC, Las Vegas, NV
David Cummings	Technical Specialist	SAIC, Las Vegas, NV
Barry Dial	Technical Specialist	SAIC, San Francisco, CA
John Tinucci	Technical Specialist	SAIC, San Francisco, CA
Steven Woolfolk	Technical Specialist	SAIC, Las Vegas, NV
U-Sun Park	Technical Specialist	SAIC, Las Vegas, NV
Tom Watson	Technical Specialist	Harza, Las Vegas, NV
David Brown	Observer	DOE/HQ (Weston)
James Donnelly	Observer	NRC, Washington, DC
Joseph Holonich	Observer	NRC, Washington, DC
John Peshal	Observer	NRC, Washington, DC
Naïem Tanious	Observer	NRC, Washington, DC
William Belke	Observer	NRC, Washington, DC

3.0 AUDIT TEAM PERSONNEL (CONTINUED)

Marshall Davenport	Observer	SAIC, Las Vegas, NV
Susan Zimmerman	Observer	State of Nevada
James Grubb	Observer	State of Nevada
Frank Kendorski	Observer	State of Nevada
Anthony Baca	Observer	YMP, Las Vegas, NV
Steven Leedom	Observer	YMP, Las Vegas, NV
Royce Monks	Observer	YMP, Las Vegas, NV
Stanley Klein	Observer	SAIC, Las Vegas, NV
Christopher Arana	Observer	DOE/AL, Albuquerque, NM
Francisco Cheng	Observer	DOE/BQ (WESTON)
Jay Jones	Observer	DOE/BQ Washington, DC

4.0 SUMMARY OF AUDIT RESULTS

4.1 Statement of Program Effectiveness

This evaluation of the SNL Quality Assurance Program indicates a noticeable awareness of Quality Assurance throughout the organization, as evidenced by interviews of SNL personnel by the entire audit team. The SNL level of cooperation given the audit team enabled them to perform an in-depth investigation and evaluation of the implementation of the QA program. Based on this investigation and evaluation, the audit team concludes that the QA Program implementation at SNL is effective, with the following exceptions:

1. The utilization of technical personnel in performing audits and surveillances would greatly enhance the effectiveness of the SNL audit and surveillance program. Much of the work reviewed in the area of design is performed by subcontractors. Subcontractors must submit final results by the end of their contracts. If the work performed by these subcontractors is not audited or reviewed by technical staff personnel in process, assurance that the final product meets project quality assurance and technical requirements is decreased. Additionally, SNL has not implemented requirements contained in the NWSI QAP NVO-196-17, Rev. 5, for the surveillance of technical activities within SNL. As a result, the audit team recommends that the Project Office perform audits of primary SNL design subcontractors (Bechtel and Parsons Brinkerhoff) or that SNL utilize Project Office technical staff in the performance of audits of these organizations.
2. The establishment of a time frame for records to be submitted from subcontractors to SNL, and a mandatory technical and QA review of records at the close of a DIM, PDM or contract, would enhance the content and effectiveness of the records packages for quality related activities. Most of the audit team members found that many DIM and PDM files had missing information or contained different types of information, and that some files did not have a technical review even after contracts were closed (some cases over one year).

4.1 Statement of Program Effectiveness (Continued)

3. The training program could be more effective by providing minimum training requirements for each type of job position within SNL. The audit team observed that training given to personnel with the same position varied and that some basic training in procedures (e.g., the procedure on generating NCRs for which everyone has responsibility) was not evident. Additionally, SNL personnel are not retrained in revisions of procedures. Retraining in revisions of procedures is essential to maintain proficiency in the quality assurance requirements.

4.2 Summary

A total of 14 Standard Deficiency Reports (SDRs) and 25 observations were identified as a result of the audit. In addition the audit team generated 6 recommendations for the consideration of the SNL Yucca Mountain Project (YMP) staff. A synopsis of the SDRs and observations and the actual recommendations are contained in Section 6.0 of this report.

Deficiencies identified by the Project Office are qualified by severity level, which is related to the significance of the deficiency. A discussion of the severity levels is provided in Enclosure 1.

The following program elements were deemed to be in compliance with the requirements of the SNL QAPP, Rev. 0, and its implementing procedures:

- 4.0 Procurement Document Control
- 6.0 Document Control
- 7.0 Control of Purchased Material, Equipment, and Services
- 8.0 Identification and Control of Samples and Items
- 10.0 Inspection and Surveillance
- 11.0 Equipment and Equipment Test Control
- 12.0 Control of Measuring and Test Equipment
- 13.0 Handling, Storage, and Shipping

Program elements in which the audit team identified deficiencies were:

- 1.0 Organization
- 2.0 Quality Assurance Program
- 3.0 Scientific Investigation Control and Design Control
- 5.0 Instructions, Procedures, and Drawings
- 15.0 Nonconformances
- 16.0 Corrective Action
- 17.0 Quality Assurance Records
- 18.0 Audits

4.2 Summary (Continued)

The following programmatic elements were not within the scope of the audit:

- 9.0 Control of Processes
- 14.0 Inspection and Test Status

The audit team did perform investigations of the SNL QA program to confirm that these programmatic elements are not applicable to the present scope of work at SNL.

The following technical activities were reviewed as part of this audit:

- 1.2.1.3.1, Site and Engineering Properties Data Base
- 1.2.1.3.3, Reference Information Base
- 1.2.1.4.1, Flow and Radionuclide Transport
- 1.2.4.2.1.1, Rock Mass Analysis
- 1.2.4.2.1.3, Laboratory Properties
- 1.2.4.6.1, Repository Performance Code Development/Certification
- 1.2.4.6.3, Preclosure Safety Analysis
- 1.2.4.1.2, Basis for Design (Seismic Activities)
- 1.2.4.3.2, Surface Facilities
- 1.2.4.3.3, Shaft/Ramps
- 1.2.4.3.4, Underground Excavations
- 1.2.4.3.5, Underground Service System
- 1.2.4.6.2, Design Analysis

5.0 AUDIT MEETINGS

5.1 Preaudit Conference

A preaudit conference was held with the SNL Technical Project Officer (TPO) and his staff at 10:00 a.m. on July 25, 1988. The purpose, scope and proposed agenda for the audit were presented. A list of attendees for this meeting is provided in Enclosure 2.

5.2 AUDIT STATUS MEETING

An audit status meeting was held with the SNL TPO and his staff at 2:00 p.m. on July 29, 1988. A status of how the audit was progressing was presented. During the meeting, the decision to continue the audit in the following week was confirmed. The audit team required an extension to allow for a more in-depth review of certain quality related activities performed by SNL. A list of attendees for this meeting is also provided in Enclosure 2.

5.3 POSTAUDIT CONFERENCE

The postaudit conference was held at 10:00 a.m. on August 3, 1988. A synopsis of the preliminary SDRs and observations identified during the course of the audit was discussed with the SNL TPO and his staff. A list of attendees for this meeting is also provided in Enclosure 2.

6.0 SYNOPSIS OF SDRs OBSERVATIONS AND RECOMMENDATIONS

6.1 Standard Deficiency Reports (SDRs)

1. SNL Audit Report MAC 88-1 was not issued within 30 working days as required. Refer to SDR No. 166, Severity Level 3.
2. There was no objective evidence that SNL nonconformance reports have been transmitted to the QA Support Contractor, the Project Office Division Directors, and the SNL TPO. Refer to SDR No. 167, Severity Level 3.
3. For the issuance of stop work orders on March 21, 1988, the following procedural violations were noted:
 - A) Receipt acknowledgments were not obtained.
 - B) Documented corrective actions were not provided by letter or memo to the initiator.
 - C) Recision of the 10 stop work orders was not documented.

Refer to SDR No. 168, Severity Level 3.

4. Position descriptions do not identify minimum education and experience requirements. Refer to SDR No. 169, Severity Level 2.
5. There was no objective evidence of QA review or approval of design input or output documents as required. Refer to SDR No. 170, Severity Level 2.
6. Responses to audit findings resulting from SNL internal audit 87-1 were received later than the 30 days required by procedures. Refer to SDR No. 171, Severity Level 2.
7. SNL has delineated less restrictive design verification requirements for QA Level II activities than for QA Level I activities without proper justification and approval from the Project Office. Refer to SDR No. 172, Severity Level 2.
8. SNL is performing QA Level III scoping work in WBS 1.2.4.2.1.3.s "Laboratory Properties," which is a QA Level I activity. Refer to SDR No. 173, Severity Level 2.
9. SNL documents are being corrected (i.e., lineouts, writeovers, etc.) without being initialed and dated for procedural requirements. Refer to SDR No. 174, Severity Level 3.

6.1 Standard Deficiency Reports (SDRs) (Continued)

10. Documentation of calculations and computer program verifications performed by subcontractors was not in closed DIM files. Refer to SDR No. 175, Severity Level 2.
11. Design documentation did not contain a justification for using data that was not contained in the NNWSI Project Reference Information Base. Refer to SDR No. 176, Severity Level 2.
12. There is no objective evidence that SNL personnel have received retraining in procedures upon revision. Refer to SDR No. 177, Severity Level 2.
13. SNL QA has not performed a review of SNL technical procedures. Refer to SDR No. 178, Severity Level 2.
14. Complex design calculations have been performed with the SNL procedure for routine calculations. Refer to SDR No. 179, Severity Level 2.

Information copies of the above SDRs are provided in Enclosure 3.

6.2 OBSERVATIONS

1. The methods for the correction of records that have been processed into the SNL records center files are not proceduralized. Minor corrections to records are allowed to be made by the records coordinator. However, minor corrections are not defined in the procedure. Refer to Observation No. 88-06-01.
2. SNL Department Operating Procedures (DOPs) are revised and issued to subcontractors. A review of subcontractor NNWSI Project QA manuals indicated that the SNL DOPs that were directly incorporated into the subcontractor QA manuals have not been revised. No objective evidence was provided to demonstrate that there is a review for impact performed on subcontractor QA procedures when DOPs are revised. Refer to Observation No. 88-06-02.
3. SNL does not presently have approved procedures for organization or trend analysis. Refer to Observation No. 88-06-03.
4. SNL should develop a formal interface with the USGS for the exchange and review of seismic data collected during monitoring of underground nuclear explosions and earthquakes. Refer to Observation No. 88-06-04.
5. Modified Work Plans are out of date or contain errors. SNL is requested to provide a schedule indicating when the work plans will be revised. Refer to Observation No. 88-06-05.

6.2 OBSERVATIONS (Continued)

6. Manuscript Review Sheets for SNL design output documents were not completed correctly. Refer to Observation No. 88-06-06.
7. SNL does not use review and comment sheets to demonstrate that a review of procedures and technical documents has been performed and that comments/concerns have been resolved. The approval signature is used by SNL to signify that a review has been performed. Refer to Observation No. 88-06-07.
8. SNL is using an unproceduralized checklist to document the review and check of design drawings. Refer to Observation No. 88-06-08.
9. QA Level III or non-qualified data are being used in the performance of QA Level II design activities. Refer to Observation No. 88-06-09.
10. The assignment of QA levels to some design tasks should be reviewed, since the present levels assigned do not appear appropriate. Refer to Observation No. 88-06-10.
11. Model development for fluid flow and radionuclide transport is presently being performed at QA Level III and is expected to continue at QA Level I at some point in the future before the license application process. There are no established criteria for transition from QA Level III to QA Level I. Refer to Observation No. 88-06-11.
12. DOP 3-4 "Design Investigation Control" Rev. B, does not require the certification of analysts by the supervisor yet DOP 3-3 "Analysis Definition Requirements" does. The procedures are inconsistent. Refer to Observation No. 88-06-12.
13. The training assigned to SNL personnel by SNL supervisors should be reevaluated. There are inconsistencies in the training assigned to personnel who hold similar positions within the organization. Refer to Observation No. 88-06-13.
14. The traceability of design and experimental activities from the final output documents (SAND reports) to the supporting input documents, Sandia Letter Reports (SLTRS), to the Design Investigation Memos (DIMs) or Problem Definition Memos (PDMs) and then to the task identified in the modified work plan, is difficult. Refer to Observation No. 88-06-14.
15. SAND reports do not provide subsequent application guidance or limitations for the information/data contained within the reports. Refer to Observation No. 88-06-15.

6.2 OBSERVATIONS (Continued)

16. Traceability of data and analyses through subcontractor calculation notebooks is poor. Refer to Observation No. 88-06-16.
17. SNL should set up a project file to store computer-generated analysis files. Presently, principal investigators or analysts are responsible for maintaining analysis files in their own file areas. Refer to Observation No. 88-06-17.
18. Review of DIM files containing computer code verifications indicates much variation in methods of documentation. A uniformly documented verification file would ensure adequate verification efforts as well as make it easier for outside individuals to evaluate the verification effort. Refer to Observation No. 88-06-18.
19. Unqualified data is being used in QA Level II Laboratory Properties activities. The resulting data is not consistent with the QA level assigned to the task. Refer to Observation No. 88-06-19.
20. An inadequate response to Observation No. 10 from YMP Audit 87-5 was submitted by SNL to the Project Office. The SNL response did not address all concerns presented in the observation. Refer to Observation No. 88-06-20.
21. There is a lack of traceability for some rock mechanics data from its initial measurement to incorporation into project documents. Refer to Observation No. 88-06-21.
22. Inconsistencies were noted for rock property values between tables in the SCP/CDR and the RIB. Refer to Observation No. 88-06-22.
23. A software certification form was not filed with the software QA clerk. Refer to Observation No. 88-06-23.
24. Modifications were not made to a PDM indicating changes in the PDM scope after the use of a particular computer program was changed. Refer to Observation No. 88-06-24.
25. There is no proceduralized method to verify computer model inputs to ensure typographical errors are corrected prior to final verification efforts. Refer to Observation No. 88-06-25.

The observations are contained in Enclosure 4.

6.3 RECOMMENDATIONS

Recommendation No. 1

SNL DOP 17-1, "Records Management System" Rev. 0, Appendix C., para. 2.4.4 states in part: "If during receipt inspection the Records Clerk has attempted to find the date of a document and has been unsuccessful, use the date of indexing the record. In the comments field note that the date was missing from the record."

It is recommended that a procedure clarification or change be initiated to eliminate the practice of the Records Clerk from using the indexing date as the date of the record/document. The Records Clerk should insist that the record initiator establish the true date.

Recommendation No. 2

SNL DOP 6-2, "Reviewing, Approving and Issuing Technical Documents," Rev. 0, para. 3.0, does not adequately describe what measures will be taken if changes are made to a contractor document subsequent to the (1) Line Review or (2) NVO review or final review. The procedure (para. 3.17) does state that the editor will work with the monitor to ensure that the contractor concurs with all changes made to the document. However, the procedure does not describe how the concurrence of changes will take place or how it will be documented. The procedure should be revised to clearly state how the originator will be notified of any document changes (i.e., a clear documentation trail should be established). In addition, figure 3 should be revised to show the contractor in the flow chart somewhere after the final review.

Recommendation No. 3

The audit team recommends that SNL procedures contain an effective date indicating when requirements are in effect and should be implemented. Some audit team members were confused about whether the last signature date on the cover page of each procedure was the effective date, or if the distribution date on the SNL YMP Project Master Document List of Controlled Documents was in fact the effective date.

Recommendation No. 4

It is recommended that rock core samples selected for mechanical testing be visually described prior to testing. The purpose of this description is to identify if the rock core sample is intact, fractured, or jointed, or possibly contains healed fractures or joints. Post-failure examinations of the sample should also be performed to determine if failure was through previously unrecognized fractures or if failure was not through previously described healed fractures or joints. Other important sample characteristics that should be identified are the existence of large clasts and vugs.

Recommendation No. 4 (Continued)

This type of sample description information is necessary for the individual analyzing the results of the mechanical test data to determine if the results of a test are truly representative of an intact sample with no large clasts or vugs. Presently, there is no procedure for this type of sample characterization. Considering the fact that numerous subcontractors may be testing samples in the future, it is recommended that a procedure be written to standardize the sample description process.

Recommendation No. 5

- 1) The records file for PDM 74-002 is missing the PDM and acceptance memo.
- 2) An acceptance memo is not contained in the records file for DIM 122.

It is recommended to supplement these files as appropriate. When initial instructions in PDMs and DIMs are supplemented, documentation (e.g., telephone conference reports or contact reports) of changes should be added to the records file. Additionally, supplemental information provided to subcontractors in PDMs and DIMs should include the same approval as the original DIM or PDM.

Recommendation No. 6

DIMs reviewed during the audit (DIMs 4, 9, 18, 20, 37, 39, 122 and 124) do not significantly address consideration of alternate methodologies/models and documentation of justification for their selection. Increasing emphasis in this area will significantly enhance the quality of the results and its defensibility in licensing.

7.0 REQUIRED ACTION

A written response is required for each Standard Deficiency Report (SDR) delineated in Section 6.0 above. The original copies of the SDRs were forwarded to the SNL TPO on August 30, 1988. Responses to each SDR are due 20 working days from the date of the SDR transmittal letter. Upon response, acceptance, and satisfactory verification of all remedial and corrective actions, the SDRs will be closed and SNL will be notified by letter of the closure.

A written response is required for 24 of the 25 observations contained in Enclosure 4 of this report. Responses are due 25 working days after the transmittal letter of this audit report.

Written responses are not required for the recommendations contained in this audit report. The recommendations were generated by the audit team for the SNL staff to consider during implementation of its Quality Assurance Program.

ENCLOSURE 1

Severity Levels

Severity Level 1

Significant deficiencies considered of major importance. These deficiencies require remedial, investigative, and corrective actions to prevent recurrence.

Severity Level 2

A deficiency which is not of major importance, but may also require remedial, investigative, and/or corrective action to prevent recurrence.

Severity Level 3

A minor deficiency in that only remedial action is required. These deficiencies are generally isolated in nature or have a very limited scope. In addition, the integrity of the end result of the activity is not affected nor does the deficiency affect the ability to achieve those results.

AUDIT REPORT 88-06
ENCLOSURE 2

<u>NAME</u>	<u>ORGANIZATION</u>	<u>TITLE</u>	<u>PREAUDIT CONFERENCE</u>	<u>DURING AUDIT</u>	<u>AUDIT STATUS MEETING</u>	<u>POSTAUDIT CONFERENCE</u>
Arana, Christopher	SNL	QA Engineer	X	X	X	
Baca, Anthony L.	DOE/NV	General Engineer	X	X		
Bauer, Stephan	SNL	MTS	X	X	X	X
Belke, William	US/NRC	QA Project Manager	X	X	X	
Bingham, F. W.	SNL	Division Supervisor	X	X	X	X
Blaylock, Robert L.	SNL	Audit Coordinator	X		X	X
Blejwas, T. E.	SNL	Division Supervisor	X	X	X	X
Brake, Marge	SAIC	Systems Engineer	X	X		
Brockman, D. L.	SNL	Administrative Assistant	X	X		
Brown, David	DOE/WESTON	QA Representative	X	X	X	X
Bushwire, D. W.	SNL	Division Supervisor	X	X	X	
Byars, Larry	SNL	TSA	X	X	X	X
Caldwell, Henry H.	SAIC	Manager, Audits ATL	X	X	X	X
Camp, William	SAIC	QA Engineer	X	X	X	
Costin, Laurence	SNL	MTS	X	X	X	
Cotter, Mae	SAIC	Branch Manager	X	X		
Cummings, David	SAIC	Technical Speicalist	X	X		
Dana, Stephen L.	SAIC	QA Engineer	X	X		
Davenport, J. M.	SAIC	Licensing Engineer	X	X		
Dengler, Samuel R.	SNL	STA	X	X		X
Dial, Barry	SAIC	Technical Speicalist	X	X		
Donnelly, James	US/NRC	QA Engineer	X	X	X	
Eghartner, Brizy L.	SNL	MTS	X	X		
Estrada, Joseph	MSD/AL	Acting Branch Chief	X			X
Green, Mary W.	SNL	MTS	X	X		X
Grubb, James	State of NV	Engineer	X	X		
Heaney, Gerard	SAIC	QA Engineer	X	X	X	X
Hill, Roger R.	SNL	TSA	X	X	X	X
Hines, Jim	DOE/AL	Director, NWQA	X		X	
Holonich, Joseph	US/NRC	Project Manager	X	X		
Hunter, Thomas	SNL	TPO	X	X	X	X
Jones, Jay G.	DOE/Headquarters	QA Geologist	X	X	X	

AUDIT REPORT 88-06
ENCLOSURE 2

<u>NAME</u>	<u>ORGANIZATION</u>	<u>TITLE</u>	<u>PREAUDIT CONFERENCE</u>	<u>DURING AUDIT</u>	<u>AUDIT STATUS MEETING</u>	<u>POSTAUDIT CONFERENCE</u>
Caplan, Paul G.	SNL	MTS	X	X		
Chondorski, Frank	State of NV	Observer	X	X		
Clamerus, Leo J.	SNL	MTS	X	X	X	
Clein, Stanley H.	SAIC	Manager, QA	X	X	X	
Cub, T. W.	SNL	MTS	X	X		
Deedon, Steve	WPFO	Physical Scientist	X	X		
MacDougall, Hugh R.	SNL	Surface Facilities	X	X		
Ansell, Wendel B.	WPFO	QA Engineer	X	X		
Herren, G. T.	SNL	Department Manager	X	X		
Hiller, Warren	SNL	STA	X	X		X
Hinks, Royce	WPFO	QA Engineer	X	X		X
Kontoya, Annamaria	CCS		X			
Kimick, Fran	SNL	Laboratory Prop.	X	X		X
Kines, Henry	LANL	QA PL	X			X
Keshel, John	NRC	Geotechnical Engineer	X	X	X	
Keters, Forrest D.	SAIC	QA Geologist	X	X		
Killips, J. S.	SNL	MTS	X	X		X
Krice, Ron	SNL	Laboratory Prop.	X	X	X	X
Krindle, Robert W.	SNL	MTS	X	X	X	
Kutman, C. A.	SNL	MTS	X	X		X
Kichards, R. R.	SNL	QA Coordinator	X	X	X	X
Kobb, R. M.	SNL	Mining Engineer	X	X		X
Kuth, Frederick J.	SAIC	QA Engineer	X	X	X	X
Kchelling, F. J.	SNL	MTS	X	X		
Kchwartz, Bary M.	SNL	STA	X	X	X	X
Kinnock, Scott	SNL	Supervisor	X	X		
Kharpton, S. E.	SNL	MLS	X	X		
Kevens, Al	SNL	Supervisor	X	X		
Kinebaugh, R. E.	SNL	MTS	X	X		X
Kublette, William	SAIC	Geotechnical Engineer	X	X	X	X
Kubramanian, C. N.	SNL	MTS	X	X	X	X

AUDIT REPORT 88-06
ENCLOSURE 2

<u>NAME</u>	<u>ORGANIZATION</u>	<u>TITLE</u>	<u>PREAUDIT CONFERENCE</u>	<u>DURING AUDIT</u>	<u>AUDIT STATUS MEETING</u>	<u>POSTAUDIT CONFERENCE</u>
Tanious, Naïem	NRC	Geotechnical Engineer	X			
Tang, Mary	SNL	MLS	X	X	X	
Tillerson, Joe	SN	Division Supervisor	X	X		X
Tillery, P. M.	LATA	RIB Staff	X	X		X
Thompson, Catherine	SAIC	QA Engineer	X	X		
Ulseth, James A.	SAIC	QA Engineer	X	X		
Umshler, Sue E.	DOE/AL	Safety Engineer	X		X	
Watson, Thomas L.	HAZRA	Technical Specialist	X		X	
Yeager, James	SNL	MTS	X	X	X	
Zimmerman, Susan	State of NV	QA Manager	X	X	X	X



ENCLOSURE 3

Department of Energy

Nevada Operations Office

P. O. Box 98518

Las Vegas, NV 89193-8518

NBS #1.2.9.3

QA Level I

AUG 30 1988

Thomas O. Hunter
Technical Project Officer
for Yucca Mountain Project
Sandia National Laboratories
P.O. Box 5800
Organization 6310
Albuquerque, NM 87185

YUCCA MOUNTAIN PROJECT OFFICE (PROJECT OFFICE) QUALITY ASSURANCE (QA) STANDARD DEFICIENCY REPORTS (SDRS) RESULTING FROM QA AUDIT 88-06 OF THE SANDIA NATIONAL LABORATORIES (SNL) IN SUPPORT OF THE YUCCA MOUNTAIN PROJECT (PROJECT) (NNL-1988-3380)

Enclosed are 14 SDR Nos. 166 through 179 that were generated as a result of the Project Office QA Audit 88-06 of the SNL support of the Project.

Provide responses to each SDR by completing Blocks 14 through 18 as appropriate on the first page of each SDR. Be advised that the audit checklist references provided on each SDR are for the Project Office internal use and should have no bearing on your ability to respond to the cited deficiencies. Copies of the responses are due back to this office within 20 working days from the date of this letter. You are asked to send the original copy of each SDR response to Juanita J. Brogan of Science Applications International Corporation (SAIC), Las Vegas, Nevada.

If you have any questions, please contact Gerard Heaney of SAIC at FTS 544-7739.

James Blaylock
James Blaylock
Project Quality Manager
Yucca Mountain Project Office

YMP:JB-3442

Enclosure:
SDR Nos. 166 through 179

WMPO STANDARD DEFICIENCY REPORT

N-QA-038
3/87

Completed by Originating QA Organization
Completed by Organization in Block 5
Comp. by Orig. QA Org.

1 Date 8/3/88		2 Severity Level <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input checked="" type="checkbox"/> 3		Page 1 of 1	
3 Discovered During WMPO Audit 88-06		3a Identified By W. B. Mansel		3b Branch Chief Concurrence Date N/A	
4 SDR No. 166		Rev. 0			
5 Organization SNL		6 Person(s) Contacted R. M. Baehr		7 Response Due Date is 20 Working Days from Date of Transmittal	
8 Requirement (Audit Checklist Reference, if Applicable) The SNL-NNWSI-QAPP, Rev. 0, Para. 18.5, states "The audit report shall be compiled by the audit team, signed by the Lead Auditor, and issued within 30 working days." (Refer to audit checklist Item No. 18-5)					
9 Deficiency Contrary to the above, the audit report for audit MAC 88-1 performed on April 15, 1988, was not issued at the time of this WMPO Audit 88-06, thereby surpassing the 30 working day issuance requirement.					
10 Recommended Action(s): <input checked="" type="checkbox"/> Remedial <input type="checkbox"/> Investigative <input type="checkbox"/> Corrective Issue audit report MAC 88-1.					
11 QAE/Lead Auditor Date 10th August 1988		12 Branch Manager Date AUG 11 1988		13 Project Quality Mgr. Date 8/14/88	
14 Remedial/Investigative Action(s)					
15 Effective Date					
16 Cause of the Condition & Corrective Action to Prevent Recurrence					
17 Effective Date					
18 Signature/Date					
19 Response <input type="checkbox"/> Accept <input type="checkbox"/> Amended Response <input type="checkbox"/> Reject		QAE/Lead Auditor/Date		Branch Manager/Date	
20 Amended Response <input type="checkbox"/> Accept <input type="checkbox"/> Reject		QAE/Lead Auditor/Date		Branch Manager/Date	
21 Verification <input type="checkbox"/> Satisfactory <input type="checkbox"/> Unsatisfactory		QAE/Lead Auditor/Date		Branch Manager/Date	
22 Remarks					
23 QA CLOSURE		QAE/Lead Auditor/Date		Branch Manager/Date	
				PQM/Date	

ENCLOSURE

WMPO STANDARD DEFICIENCY REPORT

N-QA-038
3/87

Completed by Originating QA Organization in Block 5
Completed by Org. QA Org.

1 Date 8/3/88		2 Severity Level <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input checked="" type="checkbox"/> 3		Page 1 of 2	
3 Discovered During WMPO Audit 88-06		3a Identified By P. J. Ruth		3b Branch Chief Concurrence Date N/A	
4 SDR No. 167		Rev. 0			
5 Organization SNL		6 Person(s) Contacted R. R. Richards		7 Response Due Date is 20 Working Days from Date of Transmittal	
8 Requirement (Audit Checklist Reference, if Applicable) SNL NNWSI Project QA Procedure, QAP 15-1, Rev. 0, "Nonconformance Control and Reporting for Items and Activities," Para. 5.1.7.3, states "The QA Coordinator shall send a copy of the NCR to the QASC, the responsible WMPO Branch Chief,					
9 Deficiency There is no objective evidence that QASC, the responsible WMPO Branch Chief, and SNL's TPO were sent copies of any NCRs (i.e., transmittal letter). Additional follow-up indicated that QASC does not have copies of all SNL NCRs.					
10 Recommended Action(s): <input checked="" type="checkbox"/> Remedial <input type="checkbox"/> Investigative <input type="checkbox"/> Corrective Distribute copies of all NCRs, as required by the procedure, by transmittal letter to provide objective evidence of distribution.					
11 QAE/Lead Auditor Date 8-11-88		12 Branch Manager AUG 11 1988		13 Project Quality Mgr. Date 8/8/88	
14 Remedial/Investigative Action(s)					
15 Effective Date					
16 Cause of the Condition & Corrective Action to Prevent Recurrence					
17 Effective Date					
18 Signature/Date					
19 Response <input type="checkbox"/> Accept <input type="checkbox"/> Amended <input type="checkbox"/> Reject <input type="checkbox"/> Response		QAE/Lead Auditor/Date		Branch Manager/Date	
20 Amended Response <input type="checkbox"/> Accept <input type="checkbox"/> Reject		QAE/Lead Auditor/Date		Branch Manager/Date	
21 Verification <input type="checkbox"/> Satisfactory <input type="checkbox"/> Unsatisfactory		QAE/Lead Auditor/Date		Branch Manager/Date	
22 Remarks					
23 QA CLOSURE		QAE/Lead Auditor/Date		Branch Manager/Date	
POM/Date					



**WMPO STANDARD DEFICIENCY REPORT
CONTINUATION SHEET**

**N-QA-038
10/88**

SDR No. 167

Rev. 0

Page 2 of 2

8 Requirement (continued)

and SNL's TPO.* (Refer to audit checklist Item No. 15-4)

WMPO STANDARD DEFICIENCY REPORT

H-QA-038
3/87

Completed by Originating QA Organization	1 Date 8/3/88		2 Severity Level <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input checked="" type="checkbox"/> 3		Page 1 of 2	
	3 Discovered During WMPO Audit 88-06		3a Identified By C. M. Thompson		3b Branch Chief Concurrence Date N/A	
	4 SDR No. 168		Rev. 0			
	5 Organization SNL		6 Person(s) Contacted R. R. Richards		7 Response Due Date is 20 Working Days from Date of Transmittal	
Completed by Organization in Block 5	8 Requirement (Audit Checklist Reference, if Applicable) SNL QAP 1-3, NNWSI Procedure for Quality-Related Work Stoppage, Rev. 0, Para. 4.2.2, states "In cases where work stoppage via NCR is inappropriate, or where more detailed documentation for the work stoppage is desired, the initiator					
	9 Deficiency Contrary to the above requirements, (1) receipt acknowledgements were not requested or provided for 10 stop work memos issued on March 21, 1988, (2) documented corrective actions were not provided by letter or memo to the					
	10 Recommended Action(s): <input checked="" type="checkbox"/> Remedial <input type="checkbox"/> Investigative <input type="checkbox"/> Corrective 1. Reinstruct appropriate personnel to procedural requirements. Provide objective evidence of the reinstruction with response to the SDR.					
	11 QAE/Lead Auditor Date 8-11-88		12 Branch Manager [Signature] AUG 11 1988		13 Project Quality Mgr. Date [Signature] 8/18/85	
Comp. by Orig. QA Org.	14 Remedial/Investigative Action(s)					15 Effective Date _____
	16 Cause of the Condition & Corrective Action to Prevent Recurrence					17 Effective Date _____
	18 Signature/Date					
	19 Response <input type="checkbox"/> Accept <input type="checkbox"/> Amended <input type="checkbox"/> Reject <input type="checkbox"/> Response		QAE/Lead Auditor/Date		Branch Manager/Date	
Comp. by Orig. QA Org.	20 Amended Response <input type="checkbox"/> Accept <input type="checkbox"/> Reject		QAE/Lead Auditor/Date		Branch Manager/Date	
	21 Verification <input type="checkbox"/> Satisfactory <input type="checkbox"/> Unsatisfactory		QAE/Lead Auditor/Date		Branch Manager/Date	
	22 Remarks					
23 QA CLOSURE		QAE/Lead Auditor/Date		Branch Manager/Date		
				PQM/Date		



WMPO STANDARD DEFICIENCY REPORT
CONTINUATION SHEET

N-QA-038
10/86

SDR No. 168

Rev. 0

Page 2 of 2

8 Requirement (continued)

may use a letter or memorandum to impose a work stoppage. Such correspondence should contain, at least: D) a request for immediate acknowledgement of receipt of the notification.

Para. 4.3 states "Corrective actions will be documented in the disposition section of the NCR or by letter or memorandum to the initiator."

Para. 4.4.3 states "For work stoppages imposed by means of letter or memo, the initiator and the QA Coordinator will verify to their satisfaction that appropriate corrective actions have been implemented. At that time the initiator will prepare a letter or memo to the responsible party which refers to the initiating correspondence and the activity which was subject to the stoppage and which states that the work stoppage is rescinded." (Refer to audit checklist Item Nos. 1-2, 1-3, and 1-4)

9 Deficiency (continued)

initiator, (3) rescission of the 10 stop work orders was not documented.

WMPO STANDARD DEFICIENCY REPORT

H-QA-038
3/87

Completed by Originating QA Organization

Acvt.

Completed by Organization in Block 5

Comp. by Orig. QA Org.

1 Date 8/3/88		2 Severity Level <input type="checkbox"/> 1 <input checked="" type="checkbox"/> 2 <input type="checkbox"/> 3		Page 1 of 2	
3 Discovered During WMPO Audit 88-06		3a Identified By C. M. Thompson		3b Branch Chief Concurrence Date N/A	
4 SDR No. 169		Rev. 0			
5 Organization SNL		6 Person(s) Contacted R. R. Richards		7 Response Due Date is 20 Working Days from Date of Transmittal	
8 Requirement (Audit Checklist Reference, if Applicable) NNWSI Project QA Plan, NVD-196-17, Rev. 5, Section II, Quality Assurance Program, Para. 5.1, states "All NNWSI Project participants shall establish requirements for the selection, indoctrination, and training of personnel					
9 Deficiency Contrary to the above, position descriptions reviewed for four functional positions on the NNWSI Project did not identify the minimum education and experience requirements. (Refer to letter T. O. Hunter to file, "General					
10 Recommended Action(s) <input checked="" type="checkbox"/> Remedial <input type="checkbox"/> Investigative <input checked="" type="checkbox"/> Corrective 1. Revise position descriptions to include minimum education and experience requirements.					
11 QAE/Lead Auditor Date James Blythe 8-11-88		12 Branch Manager AUG 11 1988		13 Project Quality Mgr. Date 8/15/88	
14 Remedial/Investigative Action(s)					
15 Effective Date					
16 Cause of the Condition & Corrective Action to Prevent Recurrence					
17 Effective Date					
18 Signature/Date					
19 Response <input type="checkbox"/> Accept <input type="checkbox"/> Amended <input type="checkbox"/> Reject Response		QAE/Lead Auditor/Date		Branch Manager/Date	
20 Ar. ended Response <input type="checkbox"/> Accept <input type="checkbox"/> Reject		QAE/Lead Auditor/Date		Branch Manager/Date	
21 Verifi- cation <input type="checkbox"/> Satisfactory <input type="checkbox"/> Unsatisfactory		QAE/Lead Auditor/Date		Branch Manager/Date	
22 Remarks					
23 QA CLOSURE		QAE/Lead Auditor/Date		Branch Manager/Date	
PQM/Date					



WMPO STANDARD DEFICIENCY REPORT
CONTINUATION SHEET

H-QA-038
10/86

SDR No. 169

Rev. 0

Page 2 of 2

8 Requirement (continued)

performing or verifying activities that affect quality. The requirements shall establish position descriptions that set forth minimum personnel qualifications and provide for appropriate indoctrination or training or both, prior to initiation of activities that affect quality."

Para. 5.1.1 states "Minimum education and experience requirements shall be established and documented in position descriptions for each position involved in the performance of activities that affect quality." (Refer to audit checklist Item No. 2-27)

9 Deficiency (continued)

Position Descriptions for SML Department 6310," dated July 22, 1988). The requirements in block 8 above have not been incorporated into SML implementing procedures.

10 Recommended Actions (continued ;

2. Ensure the requirements contained in Block 8 are incorporated into appropriate SML procedures.
3. Reinstruct appropriate personnel to revised procedural requirements. Provide objective evidence of the reinstruction with response to the SDR.
4. Ensure SML contractor Q. programs incorporate the requirements contained in Block 8.

N-QA-038
3/87

2 Severity Level ☐ 1 ☒ 2 ☐ 3

4 SDR No.
170 Rev. 0

7 Response Due Date is
20 Working Days from
Date of Transmittal

The NNWSI QA Plan, NVD-196-17, Rev. 5, Section III, "Scientific Investigation and Design Control," Para. 2.2.1, states "Applicable design input such as criteria letters, design bases, performance and regulatory requirements,

Contrary to the above requirements, no objective evidence could be provided to support that SNL QA has reviewed or approved design inputs (i.e., Design Investigation Memos) and design output documents (i.e., SAND Reports/Letter

1. Revise appropriate SNL procedures to incorporate the requirements contained in Block 8 above.

13 Project Quality Mgr. Data

James B. ... 0/10/14

15 Effective Date _____

17 Effective Date _____

Branch Manager/Date

PQH/Date



WMPO STANDARD DEFICIENCY REPORT
CONTINUATION SHEET

N-QA-038
10/86

SDR No. 170

Rev. 0

Page 2 of 2

8 Requirement (continued)

codes, standards, manufacturer's design data, and quality standards shall be identified, documented, and their selection reviewed and approved by the responsible design organisation and the responsible QA organisation."

Para. 2.7.1 states that design output documents shall "Show evidence that the required review and approval cycle has been achieved prior to release for procurement, construction or release to another organisation for use in other design activities. As a minimum the review and approval cycle shall include the participation of the technical and QA elements of both the responsible design organisation and the WMPO. (Refer to audit checklist Item No. 3-10)

9 Deficiency (continued)

Reports) for QA Level II design activities.

10 Recommended Actions (continued)

2. Complete the required reviews and investigate to determine what impact the lack of QA review and approval has had on SNL design input and output documents.
3. Reinstruct appropriate personnel to revised procedural requirements. Provide objective evidence of the reinstruction with response to this SDR.
4. Ensure design subcontractor QA programs incorporate the requirements contained in Block 8 above.

WMPO STANDARD DEFICIENCY REPORT

N-QA-038
3/87

1 Date 8/3/88

2 Severity Level ☐ 1 ☒ 2 ☐ 3

Page 1 of 2

3 Discovered During
WMPO Audit 88-06

3a Identified By
W. B. Mansel

3b Branch Chief
Concurrence Date
N/A

4 SDR No.
171 Rev. 0

5 Organization
SNL

6 Person(s) Contacted
R. Baehr

7 Response Due Date is
20 Working Days from
Date of Transmittal

8 Requirement (Audit Checklist Reference, if Applicable)
SNL QA procedure, QAP 18-1, "Quality Assurance Auditing Procedures," Rev. 0,
Para. 4.4, requires that a written response be provided to each reported audit
finding specifying corrective actions within 30 days of receipt of the audit

9 Deficiency
Contrary to the above requirements, responses to audit finding nos. 6, 11, and
12 from SNL Audit 87-1 (performed May 18-22, 1987) were eleven months late.
There was no reply date or objective evidence of any follow-up action for

10 Recommended Action(s): ☒ Remedial ☒ Investigative ☒ Corrective

1. Comply and follow-up with procedural requirements for audit findings

11 QAE/Lead Auditor Date

12 Branch Manager

Date

13 Project Quality Mgr. Date

He n. v. y. 11-11-88

St. J. Baehr

AUG 11 1988

James Blaylock 8/18/88

14 Remedial/Investigative Action(s)

15 Effective Date

16 Cause of the Condition & Corrective Action to Prevent Recurrence

17 Effective Date

18 Signature/Date

19 Response ☐ Accept ☐ Amended
☐ Reject Response

QAE/Lead Auditor/Date

Branch Manager/Date

20 Amended Response ☐ Accept
☐ Reject

QAE/Lead Auditor/Date

Branch Manager/Date

21 Verifi- ☐ Satisfactory
cation ☐ Unsatisfactory

QAE/Lead Auditor/Date

Branch Manager/Date

22 Remarks

23 QA CLOSURE

QAE/Lead Auditor/Date

Branch Manager/Date

PQM/Date

Completed by Originating QA Organization

Appl.

Block 5

Completed by Organization in Block 5

Comp. by Orig. QA Org.



WMPO STANDARD DEFICIENCY REPORT
CONTINUATION SHEET

N-QA-038
10/86

SDR No. 171

Rev. 0

Page 2 of 2

8 Requirement (continued)

report."

Para. 4.5.2 states "Follow-up action will be taken by observing objective evidence to verify that corrective action has been accomplished as scheduled."

Para. 4.5.3 states "After the corrective action has been verified, the lead auditor will issue a close-out letter stating that the corrective action is adequate."
(Refer to audit checklist Item No. 18-5-A)

9 Deficiency (continued)

audit findings 1, 2, 3, 4, 5, 7, 8, 9, and 10 from the same SNL Audit 87-1.

10 Recommended Actions (continued)

2. Reinstruct appropriate personnel to procedural requirements. Provide objective evidence of the reinstruction with response to the SDR.
3. Investigate to determine if the lack of response and follow-up to verify corrective actions has caused any adverse impact on quality related activities.

WMPO STANDARD DEFICIENCY REPORT

N-QA-038
3/87

1 Date 8/3/88		2 Severity Level <input type="checkbox"/> 1 <input checked="" type="checkbox"/> 2 <input type="checkbox"/> 3		Page 1 of 2
3 Discovered During WMPO Audit 88-06	3a Identified By S. Dana	3b Branch Chief Concurrence Date		4 SDR No. 172 Rev. 0
5 Organization SNL		6 Person(s) Contacted R. Hill/H. MacDougal		7 Response Due Date is 20 Working Days from Date of Transmittal
8 Requirement (Audit Checklist Reference, if Applicable) The NNWSI QA Plan, NVD-196-17, Rev. 5, Section II, "Quality Assurance Program," Para. 2.2.4, states "The requirements contained in this document apply to QA Levels I and II items and activities unless otherwise noted"				
9 Deficiency Contrary to the above requirement, SNL has delineated less restrictive design verification requirements for QA Level II activities than for QA Level I activities in the SNL-NNWSI-QAPP, Rev. 0, Section 3. QA Level II requirements				
10 Recommended Action(s): <input checked="" type="checkbox"/> Remedial <input checked="" type="checkbox"/> Investigative <input checked="" type="checkbox"/> Corrective 1. Revise the SNL QAPP and appropriate implementing procedures to incorporate the requirements in Block 8 above.				

11 QAE/Lead Auditor Date <i>James Bleyford 8/11/88</i>	12 Branch Manager Date <i>[Signature]</i> AUG 11 1988	13 Project Quality Mgr. Date <i>James Bleyford 8/18/88</i>
---	--	---

14 Remedial/Investigative Action(s)	15 Effective Date _____
-------------------------------------	-------------------------

16 Cause of the Condition & Corrective Action to Prevent Recurrence	17 Effective Date _____
---	-------------------------

18 Signature/Date

19 Response	<input type="checkbox"/> Accept <input type="checkbox"/> Reject	<input type="checkbox"/> Amended <input type="checkbox"/> Response	QAE/Lead Auditor/Date	Branch Manager/Date
20 Amended Response	<input type="checkbox"/> Accept <input type="checkbox"/> Reject		QAE/Lead Auditor/Date	Branch Manager/Date
21 Verification	<input type="checkbox"/> Satisfactory <input type="checkbox"/> Unsatisfactory		QAE/Lead Auditor/Date	Branch Manager/Date

22 Remarks

23 QA CLOSURE	QAE/Lead Auditor/Date	Branch Manager/Date	PQM/Date
---------------	-----------------------	---------------------	----------

Completed by Originating QA Organization

Completed by Organization in Block 5

Comp. by Orig. QA Org.



WMPO STANDARD DEFICIENCY REPORT
CONTINUATION SHEET

N-QA-038
10/86

SDR No. 172

Rev. 0

Page 2 of 2

8 Requirement (continued)

herein...Deviations within applicable criteria are permissible for Level II items and activities provided that adequate justification has been documented and approved by WMPO." (Refer to audit checklist Item Nos. 3-10 and 3-11.)

9 Deficiency (continued)

are less restrictive for (1) methods of design verification and (2) personnel qualifications for performing design verifications without appropriate documented justification and approval from WMPO. Additionally, SNL DOP 3-4, "Design Investigation Control," Rev. B, contains less restrictive requirements for the review and approval of QA Level II Design Investigation Memos (DIMs) as QA is required to only review and approve QA Level I DIMs.

10 Recommended Actions (continued)

2. Reinstruct appropriate personnel to revised procedural requirements. Provide objective evidence of the reinstruction with response to the SDR.
3. Investigate to determine what impact the less restrictive requirements for Level II design activities has had.
4. Ensure design subcontractor QA programs are in compliance with revised SNL QAPP requirements.

WMPO STANDARD DEFICIENCY REPORT

N-QA-038
3/87

Completed by Originating QA Organization 8/3/88
Completed by Organization In Block 5
Comp. by Orig. QA Org.

1 Date 8/3/88		2 Severity Level <input type="checkbox"/> 1 <input checked="" type="checkbox"/> 2 <input type="checkbox"/> 3		Page 1 of 2
3 Discovered During WMPO Audit 88-06		3a Identified By W. Sublette		3b Branch Chief Concurrence Date N/A
4 SDR No. 173		Rev. 0		
5 Organization SNL		6 Person(s) Contacted P. Nisick		7 Response Due Date is 20 Working Days from Date of Transmittal
8 Requirement (Audit Checklist Reference, if Applicable) SNL QAP 2-3, "Quality Assurance Level Assignment and Work Plans," Rev. A, Para. 4.5.1, states in part "Each technical task or PCA shall be given a QA level assignment of either QA Level I, QA Level II, or QA Level III. If an				
9 Deficiency A. Contrary to the above, SNL has performed QA Level III scoping work in activities identified in the Laboratory Properties (WBS 1.2.4.2.1.3.S) Modified Work Plan as QA Level I.				
10 Recommended Action(s): <input checked="" type="checkbox"/> Remedial <input checked="" type="checkbox"/> Investigative <input checked="" type="checkbox"/> Corrective 1. Initiate appropriate actions to have the draft Modified Work Plan approved and issued.				
11 QAE/Lead Auditor Date 8-11-88		12 Branch Manager Date AUG 11 1988		13 Project Quality Mgr. Date 8/16/88
14 Remedial/Investigative Action(s)				
15 Effective Date				
16 Cause of the Condition & Corrective Action to Prevent Recurrence				
17 Effective Date				
18 Signature/Date				
19 Response <input type="checkbox"/> Accept <input type="checkbox"/> Amended <input type="checkbox"/> Reject <input type="checkbox"/> Response		QAE/Lead Auditor/Date		Branch Manager/Date
20 Amended Response <input type="checkbox"/> Accept <input type="checkbox"/> Reject		QAE/Lead Auditor/Date		Branch Manager/Date
21 Verifi- cation <input type="checkbox"/> Satisfactory <input type="checkbox"/> Unsatisfactory		QAE/Lead Auditor/Date		Branch Manager/Date
22 Remarks				
23 QA CLOSURE		QAE/Lead Auditor/Date		Branch Manager/Date
PQM/Date				



WMPO STANDARD DEFICIENCY REPORT CONTINUATION SHEET

N-QA-0
10/86

SDR No. 173

Rev. 0

Page 2 of 2

8 Requirement (continued)

item or task is assigned a QA level without further subdivision, all of its subparts will have the same QA level unless an exemption is specifically documented and justified as exempt." (Refer to audit checklist Item No. T-122.)

9 Deficiency (continued)

The QA Level III scoping work was performed in the following activities:

1. A.6 - Mechanical properties of welded, devitrified Topopah Spring Member at high temperature and/or low strain rates.
2. A.7 - Anisotropy of mechanical properties of welded, devitrified Topopah Spring Member.
3. A.8 - Tensile strength of welded, devitrified Topopah Spring Member.
4. A.9 - Mechanical properties of fractures in welded, devitrified Topopah Spring Member.

Note: It was observed during the audit that SNL has a draft revision to the Laboratory Properties Modified Work Plan which does contain QA Level III Quality Assurance Level Assignment Sheets for the scoping work in the above activities.

- B) Contrary to the above, Design Investigation Memo (DIM) NO. 37 is identified as QA level III. However, the Modified Work Plan "Preclosure Safety Analysis" Revision B which governs the work in the DIM is currently at QA level II.

10 Recommended Actions (continued)

2. Investigate to determine if the performance of scoping work at QA Level III has any adverse impact on the QA Level I work activities (i.e., data collection).
3. Revise DIM 37 to indicate the appropriate QA level.

WMPO STANDARD DEFICIENCY REPORT

N-QA-038
3/87

Completed by Originating QA Organization

Completed by Organization in Block 5

Comp. by Orig. QA Org.

1 Date 8/3/88		2 Severity Level <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input checked="" type="checkbox"/> 3		Page 1 of 2	
3 Discovered During WMPO Audit 88-06		3a Identified By J. A. Olseth		3b Branch Chief Concurrence Date N/A	
4 SDR No. 174		Rev. 0			
5 Organization SNL		6 Person(s) Contacted B. Schwartz/D. Brockman		7 Response Due Date is 20 Working Days from Date of Transmittal	
8 Requirement (Audit Checklist Reference, if Applicable) SNL DOP 17-1, "Records Management System," Rev. 0, Para. 5.5, states that "Minor corrections to other documents shall be made by drawing a single line through the information to be changed, writing the change adjacent to the					
9 Deficiency Contrary to the above requirement, lineouts, scribbles, and write-overs were noted without initial, date, and corrected information during review of documents for Criteria 4, 7, and 8. Three examples: chain of custody forms					
10 Recommended Action(s): <input checked="" type="checkbox"/> Remedial <input type="checkbox"/> Investigative <input type="checkbox"/> Corrective 1. Reinstruct all personnel to procedural requirements. Provide objective evidence of the reinstruction with response to the SDR.					
11 QAE/Lead Auditor Date J. A. Olseth 8-11-88		12 Branch Manager Date R. A. Olseth AUG 11 1988		13 Project Quality Mgr. Date James Blaylock 8/18/88	
14 Remedial/Investigative Action(s)					
15 Effective Date _____					
16 Cause of the Condition & Corrective Action to Prevent Recurrence					
17 Effective Date _____					
18 Signature/Date					
19 Response <input type="checkbox"/> Accept <input type="checkbox"/> Amended <input type="checkbox"/> Reject <input type="checkbox"/> Response		QAE/Lead Auditor/Date		Branch Manager/Date	
20 Amended Response <input type="checkbox"/> Accept <input type="checkbox"/> Reject		QAE/Lead Auditor/Date		Branch Manager/Date	
21 Verifi- cation <input type="checkbox"/> Satisfactory <input type="checkbox"/> Unsatisfactory		QAE/Lead Auditor/Date		Branch Manager/Date	
22 Remarks					
23 QA CLOSURE		QAE/Lead Auditor/Date		Branch Manager/Date	
PQM/Date					



WMPO STANDARD DEFICIENCY REPORT
CONTINUATION SHEET

N-QA-038
10/88

SDR No. 174

Rev. 0

Page 2 of 2

8 Requirement (continued)

lined through text and initialing and dating by the person authorized to issue such corrections." (Refer to audit checklist Item No. 7-2.)

9 Deficiency (continued)

attached to Connolly to Nimick letter, dated 2/22/88, Purchase Request 239599/5-24-88, and NCR 87-1. Other examples were observed but not noted.

WMPO STANDARD DEFICIENCY REPORT

H-QA-038
3/87

Completed by Originating QA Organization

1 Date 8/3/88		2 Severity Level <input type="checkbox"/> 1 <input checked="" type="checkbox"/> 2 <input type="checkbox"/> 3		Page 1 of 2
3 Discovered During WMPO Audit 88-06	3a Identified By S. W. Woolfolk	3b Branch Chief Concurrence Date N/A	4 SDR No. 175 Rev. 0	
5 Organization SNL	6 Person(s) Contacted T. Laub		7 Response Due Date is 20 Working Days from Date of Transmittal	
8 Requirement (Audit Checklist Reference, if Applicable) A) SNL DOP 3-4, "Design Investigation Control," Rev. B, Para. 6.2, states "In addition to the information required in the Design Investigation Memo (DIM), the PI will ensure that the following information is documented"				
9 Deficiency A. Documentation of computerized calculations and computer program verifi- cations were not provided by Bechtel to SNL in the documentation packages for closed DIMs 4, 9, and 18.				
10 Recommended Action(s): <input checked="" type="checkbox"/> Remedial <input type="checkbox"/> Investigative <input type="checkbox"/> Corrective 1. Obtain missing documentation for these DIM packages from subcontractor. Perform a documentation review to ensure complete documentation is in the				

Apr 1

11 QAE/Lead Auditor Date 1/18/89	12 Branch Manager Date AUG 11 1988	13 Project Quality Mgr. Date 8/16/88
-------------------------------------	--	---

Completed by Organization in Block 5

14 Remedial/Investigative Action(s)		15 Effective Date
16 Cause of the Condition & Corrective Action to Prevent Recurrence		17 Effective Date
18 Signature/Date		

Comp. by Orig. QA Org.

19 Response	<input type="checkbox"/> Accept <input type="checkbox"/> Reject	<input type="checkbox"/> Amended <input type="checkbox"/> Response	QAE/Lead Auditor/Date	Branch Manager/Date
20 Amended Response	<input type="checkbox"/> Accept <input type="checkbox"/> Reject		QAE/Lead Auditor/Date	Branch Manager/Date
21 Verifi- cation	<input type="checkbox"/> Satisfactory <input type="checkbox"/> Unsatisfactory		QAE/Lead Auditor/Date	Branch Manager/Date
22 Remarks				
23 QA CLOSURE	QAE/Lead Auditor/Date	Branch Manager/Date	PQM/Date	



WMPO STANDARD DEFICIENCY REPORT
CONTINUATION SHEET

N-QA-038
10/86

SDR No. 175

Rev. 0

Page 2 of 2

8 Requirement (continued)

where appropriate: A) identification of computer calculations, including computer type, program name, program version, and the basis of application to the specific problem, B) evidence of computer program verification as specified in DOP 3-2, "Software Quality Assurance Requirements." (Refer to audit checklist Item Nos. T-173 and 178.)

- B) Para. 8.0 of DOP 3-4 states "Copies of all correspondence and documentation, such as the DIM, transmittal letter(s), ATM, APM, revisions to the DIM or ATM, final results and the final report will be maintained in the SNL/NWSSI Department 6310 Records File.

9 Deficiency (continued)

- B. Documentation of hand calculations was not provided by Bechtel to SNL in the documentation packages for the same closed DIMs. Bechtel had sent the calculation cover sheets to SNL but not the supporting calculation sheets.

10 Recommended Actions (continued)

DIM files.

2. Review other DIM packages for similar conditions.
3. Reinstruct appropriate personnel to procedural requirements. Provide objective evidence of the reinstruction with response to the SDR.
4. Institute a technical and QA review of all design packages for technical adequacy and completeness at the close of each DIM.

WMPO STANDARD DEFICIENCY REPORT

N-QA-03
3/87

1 Date 8/3/88 2 Severity Level ☐ 1 ☒ 2 ☐ 3 Page 1 of 2

3 Discovered During WMPO Audit 88-06 3a Identified By M. Brake 3b Branch Chief Concurrence Date N/A 4 SDR No. 176 Rev. 0

5 Organization SLL 6 Person(s) Contacted E. MacDougal/J. Kemp (Bechtel) 7 Response Due Date 20 Working Days from Date of Transmittal

8 Requirement (Audit Checklist Reference, If Applicable)
SNL DOP 3-4, "Design Investigation Control," Rev. B, Para. 4.1, states "To request or initiate a Design Investigation Task, the proposed investigator shall prepare a Design Investigation Memo (DIM) which shall include:

9 Deficiency
Contrary to the above, DIM 16 directed a study for the probable maximum flood used properties that are not NNWSI reference properties (USBR PMF-100). No objective evidence was provided to qualify these properties and the DIM did

10 Recommended Action(s) ☒ Remedial ☐ Investigative ☒ Corrective
1. Revise the DIM to include the required justification.

11 QAE/Lead Auditor Date 8-11-88 12 Branch Manager Date AUG 11 1988 13 Project Quality Mgr. Date 8/11/88

14 Remedial/Investigative Action(s) 15 Effective Date

16 Cause of the Condition & Corrective Action to Prevent Recurrence 17 Effective Date

18 Signature/Date

19 Response	<input type="checkbox"/> Accept <input type="checkbox"/> Amended Response <input type="checkbox"/> Reject	QAE/Lead Auditor/Date	Branch Manager/Date
20 Amended Response	<input type="checkbox"/> Accept <input type="checkbox"/> Reject	QAE/Lead Auditor/Date	Branch Manager/Date
21 Verification	<input type="checkbox"/> Satisfactory <input type="checkbox"/> Unsatisfactory	QAE/Lead Auditor/Date	Branch Manager/Date

22 Remarks

23 QA CLOSURE QAE/Lead Auditor/Date Branch Manager/Date POM/Date

Completed by Originating QA Organization

Appl.

Completed by Organization in Block 5

Comp. by Orig. QA Org.

WMPO STANDARD DEFICIENCY REPORT
CONTINUATION SHEET

N-QA-03
10/86

SDR No. 176

Rev. 0

Page 2 of 2

8 Requirement (continued)

- E. NNWSI reference properties derived from the Reference Information Base will be used unless otherwise specified. If other than NNWSI reference properties are used, then the justification as to why they were not used will be stated as will the reasoning as to why the properties to be used were selected.
- F. Specification of any special qualifying tests for verification or validation (if necessary), i.e., benchmarks.

(Refer to audit checklist Item No. T-16.)

9 Deficiency (continued)

not contain the justification.

10 Recommended Actions (continued)

- 2. Reinstruct appropriate personnel to procedural requirements. Provide objective evidence of the reinstruction with response to the SDR.

WMPO STANDARD DEFICIENCY REPORT

H-QA-03
3/87

1 Date 8/3/88		2 Severity Level <input type="checkbox"/> 1 <input checked="" type="checkbox"/> 2 <input type="checkbox"/> 3		Page 1 of 2
3 Discovered During WMPO Audit 88-06	3a Identified By C. M. Thompson	3b Branch Chief Concurrence Date N/A	4 SDR No. 177 Rev. 0	
5 Organization SNL	6 Person(s) Contacted R. Richards		7 Response Due Date is 20 Working Days from Date of Transmittal	

8 Requirement (Audit Checklist Reference, if Applicable)
The NNWSI QA Plan, NYO-198-17, Rev. 5, Section II, "Quality Assurance Program," Para. 5.1, states "All NNWSI Project participants shall establish requirements for the selection, indoctrination, and training of personnel"

9 Deficiency
There was no objective evidence provided to demonstrate that SNL NNWSI task leaders, principle investigators, or other program members have evaluated the need for retraining in revised procedures. There was no objective evidence

10 Recommended Action(s): ☒ Remedial ☐ Investigative ☒ Corrective

1. Revise the current SNL training system to require that SNL personnel are retrained/reinstructed to procedures when they are revised.

11 QAE/Lead Auditor Date 2-11-88 <i>Gerard Hane</i>	12 Branch Manager Date AUG 11 1988 <i>[Signature]</i>	13 Project Quality Mgr. Date 5/18/88 <i>Jane Blaylock</i>
---	--	---

14 Remedial/Investigative Action(s)

15 Effective Date _____

16 Cause of the Condition & Corrective Action to Prevent Recurrence

17 Effective Date _____

18 Signature/Date

19 Response <input type="checkbox"/> Accept <input type="checkbox"/> Amended Response <input type="checkbox"/> Reject	QAE/Lead Auditor/Date	Branch Manager/Date
20 Amended Response <input type="checkbox"/> Accept <input type="checkbox"/> Reject	QAE/Lead Auditor/Date	Branch Manager/Date
21 Verifi- cation <input type="checkbox"/> Satisfactory <input type="checkbox"/> Unsatisfactory	QAE/Lead Auditor/Date	Branch Manager/Date

22 Remarks

23 QA CLOSURE	QAE/Lead Auditor/Date	Branch Manager/Date	PQM/Date
---------------	-----------------------	---------------------	----------

WMPO STANDARD DEFICIENCY REPORT

N-QA-038
3/87

1 Date 8/3/88 2 Severity Level ☐ 1 ☒ 2 ☐ 3 Page 1 of 2

3 Discovered During WMPO Audit 88-06 3a Identified By P. J. Ruth 3b Branch Chief Concurrence Date N/A 4 SDR No. 178 Rev. 0

5 Organization SNL 6 Person(s) Contacted B. Schwartz 7 Response Due Date is 20 Working Days from Date of Transmittal

8 Requirement (Audit Checklist Reference, if Applicable)
The NWWSI Project QA Plan, NYO-198-17, Rev. 5, Section V, "Instructions, Procedures, Plans, and Drawings, Para. 2.0, states "An independent technical and QA review of all instructions, procedures, plans, and drawings shall be

9 Deficiency
Objective evidence could not be provided to demonstrate that SNL QA had performed a QA review of SNL technical procedures (TP-64, TP-65, TP-82, TP-83).

10 Recommended Action(s): ☒ Remedial ☒ Investigative ☒ Corrective
Perform the required review for the four examples in block 9 and all other technical procedures to ensure that the procedures contain appropriate

11 QAE/Lead Auditor Date 8-11-88 12 Branch Manager Date AUG 11 1988 13 Project Quality Mgr. Date 8/16/88

14 Remedial/Investigative Action(s) 15 Effective Date

16 Cause of the Condition & Corrective Action to Prevent Recurrence 17 Effective Date

18 Signature/Date

19 Response	<input type="checkbox"/> Accept <input type="checkbox"/> Reject	<input type="checkbox"/> Amended Response	QAE/Lead Auditor/Date	Branch Manager/Date
20 Amended Response	<input type="checkbox"/> Accept <input type="checkbox"/> Reject		QAE/Lead Auditor/Date	Branch Manager/Date
21 Verification	<input type="checkbox"/> Satisfactory <input type="checkbox"/> Unsatisfactory		QAE/Lead Auditor/Date	Branch Manager/Date

22 Remarks

23 QA CLOSURE QAE/Lead Auditor/Date Branch Manager/Date PQM/Date

Completed by Originating QA Organization

Completed by Organization in Block 5

Comp. by Orig. QA Org.



WMPO STANDARD DEFICIENCY REPORT
CONTINUATION SHEET

N-QA-038
10/86

SDR No. 178

Rev. 0

Page 2 of 2

8 Requirement (continued)

performed by the originating organization." (Refer to audit checklist Item No. 5-8.)

10 Recommended Actions (continued)

QA requirements.

2. Ensure appropriate SNL procedures contain the requirement for a QA review of procedures.
3. Investigate to determine if an adverse impact on quality activities occurred if a QA requirement was discovered to be omitted from the technical procedures.

WMPO STANDARD DEFICIENCY REPORT

H-QA-038
3/87

Completed by Originating QA Organization	1 Date 8/3/88		2 Severity Level <input type="checkbox"/> 1 <input checked="" type="checkbox"/> 2 <input type="checkbox"/> 3		Page 1 of 2
	3 Discovered During WMPO Audit 88-06	3a Identified By T. Watson	3b Branch Chief Concurrence Date N/A		4 SOR No. 179 Rev. 0
	5 Organization SNL	6 Person(s) Contacted R. Steinbaugh		7 Response Due Date is 20 Working Days from Date of Transmittal	
	8 Requirement (Audit Checklist Reference, if Applicable) SNL DOP 3-5, "Design Control and Verification," Rev. 0, Para. 4.1.3.4, states "If a significant calculation is to be performed as part of design, the PI shall adhere to the requirements of DOP 3-3, Analysis Definition Requirements."				
Completed by Organization in Block 5	9 Deficiency Complex calculations used in the design of complex systems such as the ventilation system, underground excavations and shaft design analysis are currently being performed as routine calculations under SNL DOP 3-10, "Routine"				
	10 Recommended Action(s): <input checked="" type="checkbox"/> Remedial <input type="checkbox"/> Investigative <input checked="" type="checkbox"/> Corrective 1. Review to determine which calculations are significant and perform those calculations in accordance with DOP 3-3.				
	11 QAE/Lead Auditor Date 11-11-88	12 Branch Manager Date AUG 11 1988	13 Project Quality Mgr. Date 8/11/88		
	14 Remedial/Investigative Action(s)				
Comp. by Orig. QA Org.	15 Effective Date				
	16 Cause of the Condition & Corrective Action to Prevent Recurrence				
	17 Effective Date				
	18 Signature/Date				
Comp. by Orig. QA Org.	19 Response	<input type="checkbox"/> Accept <input type="checkbox"/> Reject	<input type="checkbox"/> Amended Response	QAE/Lead Auditor/Date	Branch Manager/Date
	20 Amended Response	<input type="checkbox"/> Accept <input type="checkbox"/> Reject		QAE/Lead Auditor/Date	Branch Manager/Date
	21 Verifi- cation	<input type="checkbox"/> Satisfactory <input type="checkbox"/> Unsatisfactory		QAE/Lead Auditor/Date	Branch Manager/Date
	22 Remarks				
23 QA CLOSURE		QAE/Lead Auditor/Date	Branch Manager/Date	PQM/Date	



WMPO STANDARD DEFICIENCY REPORT
CONTINUATION SHEET

N-QA-038
10/86

SDR No. 179

Rev. 0

Page 2 of 2

8 Requirement (continued)

If routine calculations are performed as part of a design task, the investigator or analyst shall adhere to the analysis and calculation requirements for routine design calculations in DOP 3-10, Routine Design Calculations (or their equivalent)." (Refer to audit checklist Item No. T-32)

9 Deficiency (continued)

Design Calculations."

Discussion: For SNL to perform a complex (Scientific Analysis and Calculation) a Problem Definition Memo (PDM) is required to be issued in accordance with DOP 3-3, "Analysis Definition Memo." During the course of the audit, it was observed that there have not been any PDMs issued to the subcontractor who is performing the complex calculations described above.

10 Recommended Actions (continued)

2. Investigate to determine if the use of the inappropriate procedure to perform the calculations has caused any adverse impact on the quality of the work products.
3. Reinstruct appropriate personnel to procedural requirements. Provide objective evidence of the reinstruction with response to the SDR.

WMPO OBSERVATION NO. 88-06-01N-QA-012
8/88

Completed By Originating QA Organization

Noted During:

WMPO AUDIT 88-06

Identified By:

M. Cotter

Date:

8-3-88

Organization:

SNL

Person(s) Contacted:

M. Tang

Response Due Date is
20 Days from Date of
Transmittal

Discussion:

SNL-QAPP Rev. 0, Para. 17.3.8 states, "Records may be corrected in accordance with written procedures that provide for appropriate review or approval by the originating organization. The correction shall include the date and the identification of the person authorized to issue such correction and shall not obliterate the corrected data."

QAE/Lead Auditor

Date

Ben W. Henry

7-11-88

Branch Manager

Date

C. H. Camp

7/14/88

Response:

Completed By Responsee

Signature:

Date:

Response Receipt Verified/Closed



QAE/Lead Auditor

Date

Branch Manager

Date

Completed By QA Org.

Remarks:

WMPO OBSERVATION NO. 88-06-01
CONTINUATION PAGEN-QA-012
8/88

Discussion (Continued)

DOP 17-1, "Records Management System," Rev. 0, Para. 5.5, states in part, "Minor corrections to other documents shall be made by drawing a single line through the information to be changed, writing the change adjacent to the lined through text and initialing and dating by the person authorized to issue such correction. A brief explanation for correction may be placed in the margin when appropriate."

DOP 17-1, Appendix B, Para. 2.3.1 states, "If the document is not acceptable the Records Coordinator (RC) documents the reasons for rejection and returns document, transmittal form (if available) and rejection memo to the document sender for correction. In some cases it may be possible to correct the document by calling the responsible individual to obtain the missing information, which the RC then uses to correct the document in accordance with Section 5.5 of this procedure."

- A) The QAPP, Para. 17.3.8 and DOP 17-1, Para. 5.5, state that document corrections shall identify the person authorized to issue such correction and provide for appropriate review or approval by the originating organization. However, DOP 17-1, Para. 2.3.1, allows the RC to call the originating office and obtain "missing information" and use this information to correct the document. Therefore, the correction is not made by an authorized person and the correction does not go through appropriate review/approval. Additionally, other records staff members make corrections to documents in the same manner allowed for the RC.
- B) Minor corrections are made by RC or other records staff. However, minor corrections are not defined.
- C) The procedure addresses corrections made to documents before processing the records into project files. Corrections to documents that have been processed into the project files are not proceduralized.

WMPO OBSERVATION NO. 88-06-01N-QA-012
8/88Noted During:
WMPO AUDIT 88-06Identified By:
Steve DanaDate:
8-3-88Organization:
SNLPerson(s) Contacted:
B. SteinbaughResponse Due Date is
20 Days from Date of
Transmittal

Discussion:

Parsons Brinkerhoff (PB) Contract 57-0878, Section IV (Quality Assurance) mandates specific requirements be incorporated into the contractors QA Plan and implementing procedures. These requirements include use of SNL DOPs 3-1, 3-3, 3-4, 3-5, 3-6, 3-9, and 3-10. The SNL DOPs were added as attachments to the PB Contract. Several of the SNL DOPs have since been revised; however, PB has not revised all their DOPs accordingly. It should be noted the revised SNL DOPs have been transmitted to PB. In addition, a review of the PB QAPP and implementing procedures

QAE/Lead Auditor

Date

*Edward Heavey**9-14-88*

Branch Manager

Date

*William H. Camp**9/14/88*

Response:

Signature:

Date:

Response Receipt Verified/Closed



QAE/Lead Auditor

Date

Branch Manager

Date

Remarks:

WMPO OBSERVATION NO. 88-06-02
CONTINUATION PAGEN-QA-012
6/88

Discussion (Continued)

revealed no method to review revised SNL DOPs for impact on PB procedures. Without an impact review by PB, requirements imposed by either WMPO or SNL may not be incorporated into PBs program.

A review of the Bechtel QAPP and implementing procedures revealed a similar situation as described above. For example, Bechtel procedure EDPI 4.46-06 (Project Drawings), dated 10/18/86 and SNL DOP 3-1 (Preparing, Reviewing, Approving, and Issuing Engineering Drawings), dated 2/9/88.

No mechanism has been imposed by SNL on subcontractors to ensure that revisions to SNL DOPs are reviewed for impact on subcontractor procedures.

PAGE

2 OF 2

WMPO OBSERVATION NO. 88-06-03N-QA-012
8/88

Noted During:

WMPO AUDIT 88-06

Identified By:

Gerard Heaney

Date:

8-3-88

Organization:

SNL

Person(s) Contacted:

R. Richards

Response Due Date is
20 Days from Date of
Transmittal

Discussion:

PART A

Follow-up to observation No. 5 from previous WMPO Audit 87-5 revealed that the organization section of the SNL QAPP has not yet been officially revised as committed as the SNL QAPP Rev. 1 has not yet been approved by WMPO. The audit team suggests that SNL develop a procedure for organization which would, A) define the SNL organization, B) describe responsibilities for quality-related activities, and C) identify the lines of communication within the SNL organization for resolution of

QAE/Lead Auditor

Date

Branch Manager

Date

Gerard Heaney

9-14-88

Cecil H. Connors

9/14/88

Response:

Signature:

Date:

Response Receipt Verified/Closed



QAE/Lead Auditor

Date

Branch Manager

Date

Remarks:

WMPO OBSERVATION NO. 88-06-03
CONTINUATION PAGEN-QA-012
8/88

Discussion (Continued)

quality related disputes. An organization procedure separate from the QAPP would expedite the process SNL must take to indicate changes to the SNL organization.

PART B

The NWSI Project QAP requires that each participating organization perform a trend analysis of corrective action documentation. The audit team request that SNL provide a schedule for when a trend analysis procedure will be developed.

PAGE

2 OF 2

WMPO OBSERVATION NO. 88-06-04N-QA-012
8/88

Noted During:

WMPO AUDIT 88-06

Identified By:

D. Cummings
F. Peters

Date:

8-3-88

Organization:

SNL

Person(s) Contacted:

C. Subramanian

Response Due Date is
20 Days from Date of
Transmittal

Discussion:

SNL and the USGS are both collecting ground motion data. The USGS collects earthquake data and SNL collects underground nuclear explosion (UNE) data. It is Sandia's responsibility to develop a seismic design criteria for the repository program. To satisfactorily determine whether the design event is an earthquake, or a UNE, or a combination of both, Sandia will need to consider the USGS data in addition to the data they are collecting. Therefore, the two participants should develop a formal interface to exchange and review data and results before this information is published in the form of open file reports (USGS) and SAND documents (SNL).

QAE/Lead Auditor

Date

Gerard Heaney

9-14-88

Branch Manager

Date

William H. Camp

9/14/88

Response:

Signature:

Date:

Response Receipt Verified/Closed



QAE/Lead Auditor

Date

Branch Manager

Date

Remarks:

WMPO OBSERVATION NO. 88-06-04
CONTINUATION PAGEN-OA-012
8/88

Discussion (Continued)

Another benefit to establishing a formal interface will be that the two participants will be better able to coordinate the collection of ground motion data. Presently, the USGS is planning to install additional sensors in the Yucca Mountain area. It would be beneficial to the NWSI Program if Sandia were able to participate in the decision to determine where these sensors will be located. The effective placement of these sensors may enhance Sandia's present field network while still satisfactorily providing the USGS their data collection objectives.

PAGE

2 OF 2

WMPO OBSERVATION NO. 88-06-05N-QA-012
8/88

Completed By Originating QA Organization

Noted During: WMPO AUDIT 88-06	Identified By: U-Sun Park, T. Watson, F. Peters	Date: 8-3-88
Organization: SNL	Person(s) Contacted: B. Steinbaugh, T. Blejwas	Response Due Date is 20 Days from Date of Transmittal

Discussion:

Modified Work Plans are out of date or contain errors. SNL is requested to provide a schedule for when the work plans will be revised to fix the following anomalies:

- A) Modified Work Plan for WBS 1.2.4.1.2.S "Design Basis" Rev. C, page 6 of 11 should reference the SNL QAPP and not the "NWSI Weapons Test Seismic Investigation Quality Plan."

QAE/Lead Auditor <i>Bernard Heaney</i>	Date 9-14-88	Branch Manager <i>W. P. ...</i>	Date 9/14/88
---	-----------------	------------------------------------	-----------------

Response:

Completed By Responsee

Signature:	Date:
------------	-------

Response Receipt Verified/Closed ☐

QAE/Lead Auditor	Date	Branch Manager	Date
------------------	------	----------------	------

Remarks:

Completed By QA Org.

**WMPO OBSERVATION NO.
CONTINUATION PAGE**

88-06-05

N-OA-012
8/88**Discussion (Continued)**

- B) The current modified work plan for WBS 1.2.1.4.1.S "Flow and Radionuclide Transport" WP No. 12141-86, Rev. B, is not up to date. Task C, verification and validation, is no longer performed under WBS 1.2.1.4.1 (except the verification portion). The actual work being performed does not fully cover the work specified under Tasks A and B. Specifically, there has been no performance of radionuclide transport model development work as described in Tasks A and B of the Modified Work Plan. In addition, the activities described in the WAS for WBS 1.2.1.4.1 do not include any activities for radionuclide transport.
- C) Modified Work Plans for WBS 1.2.4.3.2.S "Surface Facilities" Rev. B, and WBS 1.2.4.3.5.S "Underground Service Systems" Rev. B, describe previous work but do not describe QA levels or QA controls. Work Plans for WBS 1.2.4.3.3.S "Shafts and Ramps" Rev. B, and WBS 1.2.4.3.4.S "Underground Excavation" Rev. B, do not describe previous work, QA levels or QA controls. This information is required by SNL QAPP Rev. 0, Para. 3.1.1. (It should be noted that the Modified Work Plans were issued prior to the QAPP being in place.)
- D) Modified Work Plans for WBS 1.2.4.3.4.s "Underground Excavation" Rev. B and WBS 1.2.4.3.5.s "Underground Service Systems" refer to standard engineering design and analysis procedures or widely accepted industry standard procedures under the technical procedure sections of these work plans. The work plans should refer to specific SNL or subcontractor procedures used in performing work activities.

PAGE

2 OF 2

WMPO OBSERVATION NO. 88-06-06N-QA-012
8/88

Completed by Originating QA Organization

Noted During:
WMPO AUDIT 88-06Identified By:
Steve DanaDate:
8-3-88Organization:
SNLPerson(s) Contacted:
B. SteinbaughResponse Due Date is
20 Days from Date of
Transmittal

Discussion:

A review of design output documents revealed the following:

1. SAND 88-7051

- o The Manuscript Review Sheet is not filled out correctly. For example, review requirements not checked, reviewers did not initial in appropriate space signifying completion of review and whiteout used to make corrections.

QAE/Lead Auditor

Date

Gerard Heaney

7-14-88

Branch Manager

Date

William H. Camp

7/14/88

Response:

Completed By Responsee

Signature:

Date:

Response Receipt Verified/Closed



QAE/Lead Auditor

Date

Branch Manager

Date

Completed By QA Org.

Remarks:

WMPO OBSERVATION NO. 88-06-06
CONTINUATION PAGE

N-QA-012
8/88

Discussion (Continued)

2. SAND 87-7082

- o The Manuscript Review Sheet is not filled out correctly. For example, reviewers did not initial and review requirements not checked.

PAGE

2 OF 2

WMPO OBSERVATION NO. 88-06-07

N-QA-012
8/88

Completed by Originating QA Organization

Noted During: WMPO AUDIT 88-06	Identified By: Steve Dana	Date: 8-3-88
Organization: SNL	Person(s) Contacted: T. Hunter	Response Due Date is 20 Days from Date of Transmittal

Discussion:

SNL does not use review and comment sheets to demonstrate a review has been performed and that comments/concerns have been resolved. The approval signature is used by SNL to signify a review has been performed. This condition was observed by the audit team for the review of procedures, design input and output documents and Quality Assurance Level Assignment Sheets. It is recommended that SNL document technical and programmatic review comments to demonstrate and provide objective evidence that detailed reviews have been performed on SNL procedures and work input and output documents. (Similar to a WMPO QMP-06-03 review)

QAE/Lead Auditor <i>Bernard Feaney</i>	Date 9-14-88	Branch Manager <i>William H. Camp</i>	Date 9/14/88
---	-----------------	--	-----------------

Response:

Completed By Responses

Signature:	Date:
------------	-------

Response Receipt Verified/Closed ☐

QAE/Lead Auditor	Date	Branch Manager	Date
------------------	------	----------------	------

Remarks:

Completed By QA Org.

WMPO OBSERVATION NO. 88-06-08N-QA-012
8/88

Completed by Originating QA Organization

Noted During: WMPO AUDIT 88-06	Identified By: Steve Dana	Date: 8-3-88
Organization: SNL	Person(s) Contacted: B. Steinbaugh	Response Due Date is 20 Days from Date of Transmittal

Discussion:

During review of ESF Interface Control Drawings (R07048A/1-15) it was noted that SNL is using an unproceduralized checklist, "SNL Drawing Review Checklist", to document the "review" and "check" of the drawings. The checklist contains a signature/date for the reviewer and checker and lists 9 questions relative to design verification the reviewer uses in the review process. The questions are similar to those listed in the SNL-NWSI-QAPP (para. 3.6.4.6). The checklist clearly identifies the review/checker and records their acceptance of the listed questions. Therefore, the checklist should be incorporated into

QAE/Lead Auditor

Date

Gerard Heaney

9-14-88

Branch Manager

Date

William H. Camp

9/14/88

Response:

Completed By Responsee

Signature:

Date:

Response Receipt Verified/Closed



QAE/Lead Auditor

Date

Branch Manager

Date

Completed By QA Org.

Remarks:

WMPO OBSERVATION NO. 88-06-08
CONTINUATION PAGEN-QA-012
8/88

Discussion (Continued)

SNL DOP 3-1 "Preparing, Reviewing, Approving and Issuing Engineering Drawings". This will provide documented evidence that the questions posed in the SNL QAPP have been addressed and will provide additional evidence of the review process.

PAGE

2 OF 2

WMPO OBSERVATION NO. 88-06-09

N-QA-012
8/88

Completed By Originating QA Organization

Noted During:

WMPO AUDIT 88-06

Identified By:

Tom Watson

Date:

8-3-88

Organization:

SNL

Person(s) Contacted:

B. Steinbaugh,
T. BlejwasResponse Due Date is
20 Days from Date of
Transmittal

Discussion:

Quality Level III or nonqualified data are being used in the performance of Quality Level II design activities as evidenced by 1) statements to that affect by SNL design personnel; 2) DIM 113, designated as Quality Level II, uses assumed broken rock density designated as Quality Level III in the Reference Information Base; 3) PB/S 57 references previous Quality Level III work; 4) PB/S 517 (DIM 114) dtd. February 1988 references RIB version 2.002; 5) DIM 114 Subtask 1.17-3 Calculation Notebook Volume 3 of 3, page 28 references information from the SCP-CDR which is a Quality Level III document. Quality Level III

QAE/Lead Auditor

Gerard Heaney

Date

9-14-88

Branch Manager

William H. Camp

Date

9/14/88

Completed By Responder

Response:

Completed By QA Org.

Signature:

Date:

Response Receipt Verified/Closed



QAE/Lead Auditor

Date

Branch Manager

Date

Remarks:

WMPO OBSERVATION NO. 88-06-09
CONTINUATION PAGEN-QA-012
8/88

Discussion (Continued)

data may be used in support of a Quality Level II design if, 1) a decision to proceed "at risk" is made; 2) design outputs are held as "contingent upon verification of data" until Quality Level II data supports the design data (or requires design change if it does not), and 3) effected down stream designs are also identified as contingent upon the outcome of verification of the "at risk" design. Traceability of downstream design impacts is the key to using less qualified data in Quality Level I or II designs. This practice is consistent with the position the Project Office has taken with respect to the design of the exploratory shaft.

This observation does not require a response from SNL.

WMPO OBSERVATION NO. 88-06-10N-QA-012
8/88

Completed by Originating QA Organization

Noted During:
WMPO AUDIT 88-06Identified By:
Tom WatsonDate:
8-3-88Organization:
SNLPerson(s) Contacted:
B. SteinbaughResponse Due Date is
20 Days from Date of
Transmittal

Discussion:

The assignment of quality levels to certain tasks in the underground design activities (WBS elements 1.2.4.3.3, 1.2.4.3.4, and 1.2.4.3.5) appears to be inconsistent with regard to the impact that these tasks will have on safety and waste isolation.

QAE/Lead Auditor

Date

Bernard Heaney

9-14-88

Branch Manager

Date

(N. J. O'Brien) T. L. Conroy

9/14/88

Response:

Completed By Responsee

Signature:

Date:

Response Receipt Verified/Closed



QAE/Lead Auditor

Date

Branch Manager

Date

Completed By QA Org.

Remarks:

WMPO OBSERVATION NO. 88-06-10
CONTINUATION PAGEN-QA-012
8/88

Discussion (Continued)

For example, the Mined Material Handling Method Study (which has no impact on safety or waste isolation) is designated as Quality Level II while other studies such as the Waste Emplacement Orientation and Shaft Liner Design Methodology Studies are designated Quality Level III (both having potential safety and waste isolation impacts). These studies are for the purpose of supporting the repository Advanced Conceptual Design. The Quality Level assignment process should be reviewed to assure the appropriate QA Levels have been assigned to these studies.

PAGE

2 OF 2

WMPO OBSERVATION NO. 88-06-10
CONTINUATION PAGEN-QA-012
8/88

Discussion (Continued)

For example, the Mined Material Handling Method Study (which has no impact on safety or waste isolation) is designated as Quality Level II while other studies such as the Waste Emplacement Orientation and Shaft Liner Design Methodology Studies are designated Quality Level III (both having potential safety and waste isolation impacts). These studies are for the purpose of supporting the repository Advanced Conceptual Design. The Quality Level assignment process should be reviewed to assure the appropriate QA Levels have been assigned to these studies.

PAGE

2 OF 2

WMPO OBSERVATION NO. 88-06-11N-QA-012
8/88Noted During:
WMPO AUDIT 88-06Identified By:
U-Sun ParkDate:
8-3-88Organization:
SNLPerson(s) Contacted:
R. PrindleResponse Due Date is
20 Days from Date of
Transmittal

Discussion:

OBSERVATION

Model development for fluid flow and radionuclide transport is being performed at QA Level III at present and is expected to continue at QA Level I at some point in the future before the license application analyses. There are no criteria for transition from QA Level III to QA Level I.

QAE/Lead Auditor

Date

Branch Manager

Date

Gerard Heaney

9-14-88

Clifford H. Conner

9/14/88

Response:

Signature:

Date:

Response Receipt Verified/Closed



QAE/Lead Auditor

Date

Branch Manager

Date

Remarks:

Completed By Originating QA Organization

Completed By Responder

Completed By QA Org.

WMPO OBSERVATION NO. 88-06-11
CONTINUATION PAGEN-QA-012
8/88

Discussion (Continued)

DISCUSSION

- 1) The work plan, "Flow and Radionuclide Transport," No. 12131-86 Rev. B, shows that the task A, "Model Development for Fluid Flow and Radionuclide Transport," will be conducted entirely at QA Level III. This task will essentially establish the theoretical framework for mathematically describing the physical process and hydrologic parameters. Since there is no indication that the model development will be done at QA Level I, it is a serious concern.
- 2) Task B, Flow and Transport Analyses, will assess and modify selected codes from Task A. This task will be conducted at QA Level III initially and the final analyses will be conducted at QA Level I. Presumably, Task B can pick up the model development effort in Task A and continue into QA Level I. However, there are no criteria established and the PIs are not sure when the transition from QA Level III to QA Level I will occur. Without a clear guideline, there is a potential risk that the final code may not satisfy the QA Level I requirements before the license application analyses.
- 3) SNL DOP 3-2 "Software Quality Assurance Requirements" requires a life cycle plan to be developed for QA I and II software. Since the fluid flow and radionuclide transport model will continuously evolve and especially since the physical and mathematical basis will be generally established during the early scoping study stage, the life cycle plan for this specific model development should include both the early QA Level III activities as well as the QA Level I activities. This life cycle plan should clearly indicate the criteria for the transition from QA Level III to QA Level I.

PAGE

2 OF 2

WMPO OBSERVATION NO. 88-06-12

N-QA-012

2.88

Completed by Originating QA Organization

Noted During:
WMPO AUDIT 88-06Identified By:
Steve WoolfolkDate:
8-3-88Organization:
SNLPerson(s) Contacted:
T. LaubResponse Due Date is
20 Days from Date of
Transmittal

Discussion: The procedure for Design Investigation Memos (DIM) DOP 3-4 "Design Investigation Control" Rev. B, does not require that the supervisor certify the analyst performing the design analysis in the DIM. However, the procedure for Problem Definition Memos (PDM) DOP 3-3 "Analysis Definition Requirements" Rev. A, does require certification of the analyst by the supervisor. The two procedures are inconsistent. The same type of certification should be required for individuals performing design investigation and analysis work. In addition, a definite statement with an explanation of the basis for the certification would be appropriate. (DIM 124 generated by Los Alamos Technical Associates contains a good example of minimum certifications.)

QAE/Lead Auditor

Date

Branch Manager

Date

*Gerard Heaney**9-14-88**William H. Conner**9/14/88*

Response:

Completed By Responses

Signature:

Date:

Response Receipt Verified/Closed

☐

QAE/Lead Auditor

Date

Branch Manager

Date

Completed By QA Org.

Remarks:

WMPO OBSERVATION NO. 88-06-13N-OA-012
8/88

Completed by Originating OA Organization

Noted During: WMPO AUDIT 88-06	Identified By: Catherine Thompson	Date: 8-3-88
Organization: SNL	Person(s) Contacted: R. Richards	Response Due Date is 20 Days from Date of Transmittal

Discussion:

The training assigned by SNL supervisors (see SNL QAP 2-5 "NWSI Project Training and Familiarization Procedures" Para. 5.1.1), should be reevaluated. There are inconsistencies in the training assigned to personnel who hold similar positions within the organization. Examples:

OAE/Lead Auditor <i>Gerard Heaney</i>	Date 9-14-88	Branch Manager <i>C. J. Collins H. Camp</i>	Date 9/14/88
--	-----------------	--	-----------------

Response:

Completed By Responses

Signature:	Date:
------------	-------

Response Receipt Verified/Closed <input type="checkbox"/>				
<table border="1"> <tr> <td>OAE/Lead Auditor</td> <td>Date</td> <td>Branch Manager</td> <td>Date</td> </tr> </table>	OAE/Lead Auditor	Date	Branch Manager	Date
OAE/Lead Auditor	Date	Branch Manager	Date	

Completed By OA Org.

Remarks:

WMPO OBSERVATION NO. 88-06-13
CONTINUATION PAGEN-QA-012
8/88**Discussion (Continued)**

- A) Not all task leaders were assigned training to procedure QAP 2-3 "QA Level Assignment and Work Plans." Task leaders are involved with this activity.
- B) Not all task leaders were assigned training to procedures for procurements (DOPs 4-1, 7-1, and 7-2) or nonconformances (QAP 15-1). Task leaders are involved with these activities.

Additionally, the audit team had a difficult time reviewing records to determine who had been assigned what training and if indeed the training was completed. The audit team recommends that a training matrix be established to ensure individuals are given appropriate training per their assigned position.

WMPO OBSERVATION NO. 88-06-14

N-QA-012
8/88

Completed By Originating QA Organization

Noted During:

WMPO AUDIT 88-06

Identified By:

T. Watson,
S. Woolfolk

Date:

8-3-88

Organization:

SNL

Person(s) Contacted:

T. Laub,
S. SteinbaughResponse Due Date is
20 Days from Date of
Transmittal

Discussion:

The traceability of design and experimental activities is not readily maintained from the final output documents (SAND Reports) to the supporting input documents Sandia Letter Reports (SLTRs) to the Design Investigation Memos (DIMs) or Problem Definition Memos (PDMs) and then to the task identified in the Modified Work Plans (MWP).

QAE/Lead Auditor

Date

Gerard Heaney

9-14-88

Branch Manager

Date

William H. Gump

9/14/88

Response:

Completed By Responsee

Signature:

Date:

Response Receipt Verified/Closed



QAE/Lead Auditor

Date

Branch Manager

Date

Completed By QA Org.

Remarks:

WMPO OBSERVATION NO.
CONTINUATION PAGE

88-06-14

N-QA-012
8/88

Discussion (Continued)

- A) The relationship of DIMs to Tasks and Activities as identified in the MWP for the underground design activities, is very unclear. To provide traceability and an overall sense of direction, DIMs should specifically relate to tasks identified in the MWP. The sum of all tasks (DIMs) would then satisfy the work identified in the MWP, and work plan tasks could better be tied to project logics and schedules.
- B) Tracing a SAND report back to supporting SLTRs, PDMs, and DIMs in the Preclosure Safety Analysis Activity is difficult and often depends on the author's memory. It is recommended that the documentation file for a SAND report or other SNL output documents identify applicable SLTRs, PDM, DIMs and other appropriate documents.

PAGE

2 OF 2

WMPO OBSERVATION NO. 88-06-15

N-QA-012
8/88

Completed by Originating QA Organization

Noted During: WMPO AUDIT 88-06	Identified By: Tom Watson	Date: 8-3-88
Organization: SNL	Person(s) Contacted: B. Steinbaugh	Response Due Date is 20 Days from Date of Transmittal

Discussion:

SAND reports do not provide subsequent application guidance or limitations. DOP 6-2 "Reviewing, Approving, and Issuing Technical Information Documents" should be revised to require that Quality Assurance Level designations for all information contained in these reports be identified and/or a lead in page dedicated to placing limitation/restrictions for subsequent design use or reference should be added.

QAE/Lead Auditor <i>Bernard Kearney</i>	Date 9-14-88	Branch Manager <i>G. William N. Conn</i>	Date 9/14/88
--	-----------------	---	-----------------

Response:

Completed By Responsee

Signature:	Date:
------------	-------

Response Receipt Verified/Closed	<input type="checkbox"/>
----------------------------------	--------------------------

QAE/Lead Auditor	Date	Branch Manager	Date
------------------	------	----------------	------

Completed By QA Org.

Remarks:

WMPO OBSERVATION NO. 88-06-16N-QA-012
8/88Noted During:
WMPO AUDIT 88-06Identified By:
Tom WatsonDate:
8-3-88Organization:
SNLPerson(s) Contacted:
B. SteinbaughResponse Due Date is
20 Days from Date of
Transmittal

Discussion:

Calculation notebooks should be provided with an index, data used (including source) summary, and other similar guidance to improve traceability and to ensure completeness of required documentation for QA Level I and II designs. DIM file 112 is an example of a notebook which indicated poor traceability of data and analyses.

QAE/Lead Auditor

Date

Gerard Healey

9-14-88

Branch Manager

Date

William H. Camp 9/14/88

Response:

Signature:

Date:

Response Receipt Verified/Closed



QAE/Lead Auditor

Date

Branch Manager

Date

Remarks:

WMPO OBSERVATION NO. 88-06-17

N-QA-012

8/88

Noted During:
WMPO AUDIT 88-06Identified By:
Barry DialDate:
8-3-88Organization:
SNLPerson(s) Contacted:
S. BauerResponse Due Date is
20 Days from Date of
Transmittal

Discussion:

Sandia should set up a computer project file area to store computer generated analysis files for calculations performed by Sandia analysts. These analysis files should include:

- 1) Input and output files from computer analyses,
- 2) Graphics and Post-Processor files,
- 3) Other computer generated analysis files necessary to document, reproduce, and/or verify analysis results.

QAE/Lead Auditor

Date

Gerard Haney

9-14-88

Branch Manager

Date

William H. Camp

9/14/88

Response:

Signature:

Date:

Response Receipt Verified/Closed



QAE/Lead Auditor

Date

Branch Manager

Date

Remarks:

WMPO OBSERVATION NO. 88-06-18

N-QA-012
8/88

Completed by Originating QA Organization

Noted During: WMPO AUDIT 88-06	Identified By: Barry Dial	Date: 8-3-88
Organization: SNL	Person(s) Contacted: S. Bauer	Response Due Date is 20 Days from Date of Transmittal

Discussion: DOP 3-2, "Software Quality Assurance Requirements," Rev. 0, Para. 6.7 (Application Verification), requires that "Verification efforts will be fully documented." The procedure requires that the documentation should include the method, actual steps taken or test run, and the results. It was observed during the technical audit that the degree (i.e., content) of the verification documentation varies between a brief 1 to 2 paragraph problem description, input listing, and figure presenting the results; to more extensive documentation which provides a complete discussion of the following topics:

QAE/Lead Auditor <i>Gerald Heaney</i>	Date 9-14-88	Branch Manager <i>(William F.) Cray</i>	Date 9/14/88
--	-----------------	--	-----------------

Response:

Completed By Responder

Signature:	Date:
------------	-------

Response Receipt Verified/Closed ☐

QAE/Lead Auditor	Date	Branch Manager	Date
------------------	------	----------------	------

Remarks:

Completed By QA Org.

WMPO OBSERVATION NO. 88-06-17
CONTINUATION PAGEN-QA-012
8/88

Discussion (Continued)

This file area should be maintained by the Project Records Staff and organized based on the PDM file numbers.

Under the direction of the Project Records Staff, PI's and analysts would copy and/or enter computer generated analysis files into the project file area along with a written log documenting:

- 1) File Name,
- 2) PDM, DIM and/or Analysis Number,
- 3) Description of the File,
- 4) Program Name and Version of the program which reads and/or wrote the file.
- 5) Sandia Letter Report and/or Draft SAND report number that the analysis supports.

A copy of the file log would also be entered into the PDM and/or DIM file.

Under the current system at Sandia the PI and/or analyst is responsible for maintaining analysis files in their own file areas. Given the amount of time necessary to review/approve SAND reports and other project documents, there is a risk that: 1) the analyst will leave Sandia and the files will not be complete for another individual to continue the activity, and 2) Computer operating systems will change making the old files unreadable if the files were not adequately changed when the new operating systems came on line, or 3) the PI or analyst will delete the files or forget the purpose of each file. Given that these computer generated files may be the only record or documentation for analyses reported in SAND reports, design or licensing documents, they should be treated as traceable records and stored in a manner which allows retrievability and access at a later date.

PAGE

2 OF 2

WMPO OBSERVATION NO. 88-06-18
CONTINUATION PAGEN-QA-012
8/68

Discussion (Continued)

- o Objective of Verification
- o Code Capabilities and/or Models Exercised,
- o Physical Problem Description,
- o Assumptions,
- o Analytic or Empirical Solution and/or Data,
- o Acceptance Criteria,
- o Analysis Procedure:
 - Approach,
 - Input,
 - Analysis Steps.
- o Discussion of Results:
 - Graphical Comparison,
 - Tabular Comparisons.

It is recommended that Para. 6.7 of DOP 3-2 be modified to require that the above stated topics be addressed (where applicable) in the documentation of application verification efforts. The proposed approach would ensure that application verification efforts are adequately and uniformly documented as well as make it easier for outside individuals to evaluate the application verification effort.

PAGE

2 OF 2

WMPO OBSERVATION NO. 88-06-19

N-QA-012
8/88Noted During:
WMPO AUDIT 88-06Identified By:
William SubletteDate:
8-3-88Organization:
SNLPerson(s) Contacted:
Fran Nimick
Ron PriceResponse Due Date is
20 Days from Date of
Transmittal

Discussion:

It was observed that unqualified data was being used in QA-Level II activities in the laboratory properties WBS element 1.2.4.2.1.3.S. The unqualified data was used in tasks B.1 and B.2 which were both QA Level II.

QAE/Lead Auditor

Date

Gerard Heaney

9-14-88

Branch Manager

Date

William H. Camp

9/14/88

Response:

Signature:

Date:

Response Receipt Verified/Closed



QAE/Lead Auditor

Date

Branch Manager

Date

Remarks:

WMPO OBSERVATION NO. 88-06-19
CONTINUATION PAGEN-QA-012
8/88

Discussion (Continued)

The University of New Mexico is performing QA Level II mineralogical work using EP-0007. This work is being performed under task B.1. Results from this task will be combined with previously developed unqualified porosity, mechanical, or thermal data to produce empirical relationships. These empirical relationships will be unqualified and therefore inconsistent with the QA Level II designated for this task.

A statistical analysis was performed in task B.2 as part of PDM-33. The process of this task was performed at QA Level II. However, the data that was used in this statistical analysis was unqualified. Therefore, the resulting data is unqualified which is inconsistent with the QA Level II designated for this task.

It is recommended that the Modified Work Plan be revised, as per QAP 2-3, Rev. A, Section 5.1, such that QA Level III tasks are added for analyzing QA Level III or unqualified data.

PAGE

2 OF 2

WMPO OBSERVATION NO. 88-06-20

N-QA-012
8/88

Completed by Originating QA Organization

Noted During: WMPO AUDIT 88-06	Identified By: William Sublette	Date: 8-3-88
Organization: SNL	Person(s) Contacted: Fran Nimick Ron Price	Response Due Date is 20 Days from Date of Transmittal
<p>Discussion:</p> <p>SNL provided an inadequate response to Observation No. 10 from WMPO Audit 87-5. The SNL response did not address one of the main concerns presented in this observation.</p> <p>Observation No. 10 indicated that a questionable method was used to develop the empirical relationships between porosity and mechanical properties. In most instances the porosity for each mechanical tested sample was not known. The porosity for these mechanically tested core samples were determined by linear interpolation between other core samples which had porosity data.</p>		

QAE/Lead Auditor <i>Gerard Hesney</i>	Date 9-14-88	Branch Manager <i>William H. C...</i>	Date 9/14/88
--	-----------------	--	-----------------

Completed By Responsee

Response:

Signature: _____ Date: _____

Response Receipt Verified/Closed ☐

QAE/Lead Auditor	Date	Branch Manager	Date
------------------	------	----------------	------

Completed By QA Org.

Remarks:

Discussion (Continued)

Using interpolation methods to estimate porosity values can lead to significant errors considering the random variability of porosity with depth that exists in the sites volcanic tuffs. Therefore, it is recommended that the empirical relationships developed from the interpolated porosity data not be used until new data is developed or the present empirical relationships are verified by conducting porosity tests on core sample remnants from the mechanical testing.

Presently, these empirical relationships have been used for developing mechanical properties in the RIB, SCP and possibly other documents as well. After previous and current discussions with cognizant project personnel, they have stated that they are aware of the inherent problem with the empirical relationships developed from interpolated porosities and they indicated that these questionable relationships will not be used in the future and will not be implemented in the next RIB.

WMPO OBSERVATION NO. 88-06-21

N-QA-012
8/88

Completed by Originating QA Organization

Noted During:
WMPO AUDIT 88-06Identified By:
William SubletteDate:
8-3-88Organization:
SNLPerson(s) Contacted:
Fran Nimick
Ron PriceResponse Due Date is
20 Days from Date of
Transmittal

Discussion:

It was noted that there was a lack of traceability for some rock mechanics data from its initial measurement in the laboratory, through its analysis, and ultimately its incorporation into documents such as the SCP/CDR and the RIB. Raw data sent from the laboratory to the Principal Investigator responsible for analyzing the data was not always formally transmitted and signed off. Subsequently, this data was used in the variability analysis from which the results were ultimately incorporated into the SCP/CDR and the RIB. It was also noted that there is no record indicating which rock property data was used in the

QAE/Lead Auditor

Date

Branch Manager

Date

Gerard Heaney

7-14-88

G. J. O'Brien, Jr.

9/14/88

Response:

Completed By Responsee

Signature:

Date:

Response Receipt Verified/Closed



QAE/Lead Auditor

Date

Branch Manager

Date

Completed By QA Org.

Remarks:

WMPO OBSERVATION NO. 88-06-21
CONTINUATION PAGEN-QA-012
8/88

Discussion (Continued)

variability analysis. Because of this lack of traceability, it makes it impossible to perform a quality control check on the variability analysis and the rock property values presently in the SCP/CDR and the RIB. It is recommended that in all future work, adequate traceability is maintained.

The Project Office will follow-up this situation subsequent to receiving SNLs response.

WMPO OBSERVATION NO. 88-06-22

N-QA-012
8/88Noted During:
WMPO AUDIT 88-06Identified By:
William Sublette
Forrest PetersDate:
8-3-88Organization:
SNLPerson(s) Contacted:
Steve BauerResponse Due Date is
20 Days from Date of
Transmittal

Discussion: Some inconsistency of rock property values were found between two tables in the SCP/CDR and the RIB. Inconsistencies between dry thermal conductivity values were noted in Table 2-9 and Table 0-4 in the SCP/CDR. These inconsistencies were noted in the variability evaluation for thermal mechanical units TCw, TSW1, TSW2, and TSW3. There was also an inconsistency noted between the dry thermal conductivity in unit TCw in Table 2-9 of the SCP/CDR and the RIB.

The Project Office will follow-up this situation subsequent to receiving SNLs response.

OAE/Lead Auditor

Date

Branch Manager

Date

Gerard Keaney

9-14-88

William H. Crump

9/24/88

Response:

Signature:

Date:

Response Receipt Verified/Closed



OAE/Lead Auditor

Date

Branch Manager

Date

Remarks:

WMPO OBSERVATION NO. 88-06-23

N-QA-012
8/88

Noted During:

WMPO AUDIT 88-06

Identified By:

J. Tinucci

Date:

8-3-88

Organization:

SNL

Person(s) Contacted:

B. Eghartner

Response Due Date is
20 Days from Date of
Transmittal

Discussion:

The STRESS3D code was used in PDM 75.013. According to DOP 3-2, "Software Quality Assurance Requirements" Rev. 0, documentation showing that the code has been certified should be filed with the software QA clerk. The certification form for STRESS3D could not be found by the software QA clerk, however, the code has been certified according to the procedures. Suggest filing the proper forms with the software QA clerk.

QAE/Lead Auditor

Date

Gerard Hesney

9-14-88

Branch Manager

Date

William H. Camp

9/14/88

Response:

Signature:

Date:

Response Receipt Verified/Closed

☐

QAE/Lead Auditor

Date

Branch Manager

Date

Remarks:

Completed by Originating QA Organization

Completed by Responsee

Completed by QA Org.

WMPO OBSERVATION NO. 88-06-24N-QA-012
8/88

Completed by Originating QA Organization

Noted During: WMPO AUDIT 88-06	Identified By: J. Tinucci	Date: 8-3-88
Organization: SNL	Person(s) Contacted: B. Eghartner	Response Due Date is 20 Days from Date of Tr. initial

Discussion:

In PDM 75.013 it was stated that the HEFF code, Version 4.1, would be modified, documented, and used to perform analyses. However, evidence examined in a draft letter report indicates that work was done to modify, document, and perform analyses using the STRESS3D code (work was not specified in the PDM to use STRESS3D). The PI explained how the work had evolved and why it was necessary to do it this way in order to accomplish the PDM objective using the HEFF code. Suggest a memo be added to the project files documenting changes in PDM scope. This situation appeared to be an isolated case.

QAE/Lead Auditor <i>Gerard Haney</i>	Date <i>9-14-88</i>	Branch Manager <i>Ch. Teller + L. Camp</i>	Date <i>9/14/88</i>
---	------------------------	---	------------------------

Response:

Completed By Responses

Signature:	Date:
------------	-------

Response Receipt Verified/Closed ☐

QAE/Lead Auditor	Date	Branch Manager	Date
------------------	------	----------------	------

Completed By QA Org.

Remarks:

WMPO OBSERVATION NO. 88-06-25N-OA-012
8/88

Completed By Originating QA Organization

Noted During:
WMPO AUDIT 88-06Identified By:
J. TinucciDate:
8-3-88Organization:
SNLPerson(s) Contacted:
B. EghartnerResponse Due Date is
20 Days from Date of
Transmittal

Discussion: In all the files examined, there was no indication that the data used as input to computer models had been verified as actual code input. However, there is no procedure in DOP 3-3 "Analysis Definition Requirements" that requires it to be verified. Verification typically takes place during review of reports documenting results of the analysis. Without this independent check, there is no QA mechanism to ensure that analyses were performed without typographical errors in the input files (e.g., placing decimal in wrong place). Suggest adding a section in DOP 3-3 that requires a reviewed (indicated by reviewer signature) copy of input data file be placed in record files.

OAE/Lead Auditor

Date

Branch Manager

Date

Bernard Heaney

9-14-88

William F. Camp

9/14/88

Response:

Completed By Responsee

Signature:

Date:

Response Receipt Verified/Closed



OAE/Lead Auditor

Date

Branch Manager

Date

Completed By QA Org.

Remarks: